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## ORIGINAL ARTICLES

# PRESIDENT'S ADDRESS BEFORE THE AMERICAN SOCIETY OF ORTHODONTISTS*

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IT is my privilege to address you, as president, at this the Nineteenth Annual Meeting of the American Society of Orthodontists.

To our guests and friends, I extend a most hearty welcome from the Society.

It would seem but fitting at this meeting in St. Louis that I should adhere to the proverbial custom of presidents of scientific and arts societies, of reviewing the past achievements and I might say (mis-chievements) of our academy. However, as we are to enjoy a paper by Dr. Weinberg covering the period of the existence of this Society, giving index and classification of work, in order that there will be no duplication, I am going to make a comparison of the president's address on the morning of the first meeting and conditions existing on the opening of the present meeting.

To many of us this particular meeting in St. Louis is of great interest and pleasure, because it is the city in which most of the older members of this society secured their inspiration and knowledge on which they built their orthodontic practices.

I can not refrain from paying tribute at the outset of my remarks to Dr. Edward H. Angle. To Dr. Angle is due the credit of not only the organization of this society, but the teaching of the first men who entered the specialty of orthodontia. We who were privileged to attend the Angle School of Orthodontia in this city, can well recall the sacrifice of time and energy that Dr. Angle gave the promotion of orthodontia, and it is a great personal regret, which I am sure you all feel, that we can not have Dr. Angle with us at this meeting, that we

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might show our appreciation and gratitude for what he has done for this society and its members.

Dr. Angle's views of the future of orthodontia were expressed in his address at the first meeting of this society in 1901 and show the clear conception he entertained of the future need of developing orthodontia as a specialty, and I would like to quote from that address a few paragraphs that can not fail to interest you.

In opening the meeting he said, "This morning marks another epoch in the history of science, the opening of the first meeting of the Society of Orthodontists, a society organized for the promotion and exaltation of that branch of dental science known as orthodontia, and looking to the early and complete recognition of this branch as a distinct specialty, to be taught and practiced as such.

"Doubtless it would not be inappropriate for me at this time to set forth the reasons for the organization of such a society, for unless there be good and valid reasons for its establishment, its course must be marked by an unhealthy and unprofitable existence, and probably an early dissolution. On the other hand if there be good and sufficient reasons for such a society they should be known and recognized by the lovers of all branches of medical science, and the sympathy and assistance of all enlisted, that the greatest degree of benefit may be conferred, not only to the science of orthodontia, but to humanity at large, to whose welfare all laws enacted, and all societies organized owe their first duties. Hence I shall endeavor to set forth some reasons why this organization should be founded, and why I believe this meeting marks the beginning of something so grand, so noble, something destined to so elevate dentistry in general and so greatly benefit humanity that even we who are assembled here this morning do not yet dream of its full importance, though we, as founders, are most interested, and our hearts beat highest in enthusiasm, anxiety, and love for this branch of science, and the success of this, the first meeting."

To prove that Dr. Angle's predictions of the success of orthodontia, as a specialty, I wish to call your attention to the wonderful progress and growth during the existence of this society. Three years after organization there were only seven orthodontists in the country; today there are several hundred practicing this specialty, and its field of usefulness has attracted very broad attention. A progress I am sure reflects great credit on the judgment of the organizers.

Not only have the orthodontists increased rapidly in number, but we have several orthodontic societies, that are doing very valuable work in furthering the cause of orthodontia. That orthodontia has elevated dentistry is reflected by the inspiration given by members of this specialty to the formation of different specialties in dentistry. I refer to the periodontologist, exodontist, prosthodontist and radiodontist.

Dr. Angle spoke of the history of orthodontia up to that time following with a paragraph on the lack of knowledge of this subject, from which I quote the following:

"While the demand for general operations in dentistry is supplied with as high an average of skill, perhaps, as any of the branches of the arts or sciences, the same can not be said of orthodontia, for notwithstanding the fact that mal-

occlusion with all its baneful effects has grown to be almost the rule, instead of the exception, only the merest fraction of those needing attention are receiving it, and even such treatment as is meted out is of such a nature as to leave but little doubt in the mind of the careful investigator that more blunders are committed than successes gained, and that in a heavy percentage of cases more injury has been done to the dental apparatus as a whole than benefit conferred, to say nothing of the frequently severe tax unnecessarily inflicted upon the entire physical economy of the patient."

Regarding the above paragraph the only comment I would like to make is that today the conscientious dentist does not attempt the correction of cases unless specially qualified to do so, and treatment of orthodontic cases is rarely attempted in connection with the successful practice of general dentistry.

Regarding appliances Dr. Angle had this to say: "Some of them, marvels of ingenuity and skill, others absurdly complex, most unsightly, crude, and inconvenient in the extreme, as inefficient and faulty in principle as it is possible to imagine and made to operate in direct violation to many of the true physiologic requirements of tooth movement and hygienic conditions incident thereto. They are produced in ignorance and operated in ignorance and the results are familiar to all, yet our current literature still teems with them."

In no other channel has orthodontia developed to the extent it has in producing efficient, esthetic, and prophylactic appliances for orthodontic treatment. It is impossible for me to trace the wonderful progress our profession has made along this line, as time will not permit of my recording this history.

Unfortunately we still have with us the commercial orthodontist, if such a term is proper, who advertises his wares and knowledge for sale to the dental profession. However, they are very few in number, and the members of the profession, as they become enlightened, realize that orthodontia will never be included in the curriculum of a correspondence school.

In contrast the attitude of the dental profession towards orthodontia in 1901 and 1919 is very much marked and it might be of interest to review the questions Dr. Angle asked the morning of our first meeting:

"Why is it that so little really good work is done in orthodontia, in proportion to opportunities and importance?" This may be true to a certain extent today when we consider the proportion and opportunities offered, but the exceptional high-grade work accomplished in all of our large cities today by members of this specialty is very gratifying and time will soon grant the privilege to everyone, the opportunity of having proper orthodontic treatment when required.

"Why is orthodontia in practice but a side issue to all other operations in dentistry?" This is not the condition today, and to the founders of this society is due the credit of changing this condition. The dental profession has, through the teaching and clinical work of the orthodontists, come to recognize the value of occlusion as the foundation of all dental operations, and look upon orthodontists as guardians of occlusion.

"Why are the discussions of papers on orthodontia so lamentably weak, usually confined to the discussion of peculiar regulating appliances, or tedious description of so-called rare cases?"

Today the reference to orthodontic appliances is very rarely made at a

dental meeting, but on the contrary very intelligent discussions on occlusion and the value of early orthodontic treatment, for the establishment and preservation of occlusion, is often in dental literature. This condition is brought about by improved orthodontic instruction in postgraduate schools and colleges.

The advice given parents regarding correction of malocclusion by general practitioners of dentistry is very different today from what Dr. Angle stated that morning. It is very gratifying to note in recent years the growing percentage of young patients seeking advice and treatment for malocclusion in its early stages of development. In fact, preventive measures in all branches of the dental and medical science have progressed so rapidly that consultation for early diagnosis is proper and common practice today.

Our president in 1901 said the answer to all these questions seemed plain to him, and should, as we think, be apparent to all, even to casual investigators. It is that orthodontia is a great science by itself with requirements in its study and practice so radically unlike that of other branches of dentistry, that the two can never be profitably combined either in study or practice. Each seriously handicaps the others, and orthodontia naturally suffers most, for the reason that it is wholly unlike other operations in dentistry. It is therefore least understood, least studied, and made secondary alike in dental colleges, in practice, and in dental societies. Hence it is not unlikely to follow that in proportion as a dentist is successful in other operations of dentistry, he will naturally be less successful in those of orthodontia, for in that same proportion he will have less inclination, less time, and less energy to devote to it. Under heading of orthodontia as a separate science he spoke as follows: "Orthodontia has been revolutionized and we would ask those who may doubt the practicability of this specialization of orthodontia, to but reflect on the marvelous advancement which has been made in the various branches of medicine through specialization, not to mention the growth of nearly every other branch of science and art accomplished by the same power. Indeed, this is the very age of specialization, and was there ever such an age of progress? Wise is he who recognizes the natural and resistless power of specialization, and narrow indeed must be he who is blind to its demands and attempts to resist its might."

So we must work patiently, and wait, and believe that orthodontia, so replete with possibilities for improving the health and the happiness of orally deformed humanity, and for uplifting the highest phase of art, or that of improving the lines of beauty, and that, too, not applied to the cold unresponsive lines of marble, clay, or on canvas, but to the living, divinely patterned human face, will and must be a firmly established and useful specialty of dental science; and if this is inevitable, as I believe it is, then it is fitting and proper that this society should be maintained, for our best efforts can only yield the best fruit in strong, earnest, sincere, concerted action.

As we look back today and take into consideration the different impulses of progress in orthodontia, we realize that this success could never have been attained had not orthodontia been divorced from the general practice of dentistry. The men who made this progress possible were not cranks, as a president of the National Dental Association stated, but were men of high ideals, concentrating their efforts to correct malocclusion, one of the chief factors in the destruction

of the human mouth, and the great value of orthodontic treatment today is being more and more appreciated, showing that a great many of the hopes and predictions are fulfilled that were entertained by those pioneers who left the meeting, thrilled with ambition, to place orthodontia in its proper sphere of dental and medical science.

It must be a great source of satisfaction to the early members of this society, to feel that our progress has been uninterrupted by personal ambition or politics, and may I impress upon the members today the necessity of continuing our sincere, broad, liberal, and honest efforts, that our progress may continue, as we are but a young profession, with a great many avenues open for advancement.

In conclusion, I wish to carry out a request of our first president, who said that in the deliberations of this society now and hereafter, let us not forget the debt we owe to many noble men who have worked so earnestly in this our chosen field, and who, though often seriously hindered, have assisted in developing orthodontia.

He mentioned with tender reverence the names of Drs. Fauchard, Schange, Fox, Harris, Westcott and McGill; and the living shining lights in orthodontia in those days were Kingsley, Baker, Guilford, Brady, Case, Matteson, Ottolengui, Jackson, Farrar and Goddard. To the list I wish to add the names of presidents of this organization and some of the men who have contributed to orthodontic literature and technic.

I thought it might be of interest to throw upon the screen as many slides of these men as it was possible for me to obtain: Edward H. Angle; A. W. Kingsley; J. N. Farrar; S. H. Guilford; V. H. Jackson; Henry S. Baker; R. Ottolengui; Calvin S. Case; Milton T. Watson, president, 1903, 1912; Lloyd S. Lourie, president, 1904; H. A. Pullen, president, 1907; C. A. Hawley, president, 1908; F. M. Casto, president, 1909; B. F. Gray, president, 1910; A. P. Rogers, president, 1911; B. E. Lischer, president, 1913; Guy S. Hume, president, 1914; F. C. Kemple, 1916; M. N. Federspiel, president, 1917; D. W. Flint, president, 1918; J. L. Young; Martin Dewey; and Fred S. McKay.

DISCUSSION

*Dr. C. M. McCauley, Dallas, Texas.*—We have had the pleasure of listening to a most excellent address which contains sufficient texts for a number of sermons. In fact, I have never heard an address delivered by a president of this association that did not contain texts for a great many sermons which should be preached not only to the members of this society but to the entire dental profession.

One unfortunate thing with reference to the proceedings of this society is that they can not reach the entire dental profession, not because the average general practitioners need the knowledge that is here disseminated to use in their own practice, but because they need to know that it does not belong in their practice.

I have jotted down three points on which I expect to base the few remarks which I have to make. The first is education, upon which the president dwelt at length in his address. The second is prevention, which he has also touched upon; and the third, association, in which all of us should be interested.

So far as education is concerned, you will all agree that it is one of the great handicaps with reference to the specialty of orthodontia. The country practitioner, the rural man, is not as a rule educated in orthodontia, and he is not sufficiently educated in many cases to know that he is not educated in orthodontia. In many of these cases the patients who fall into their hands suffer. The average man who follows general practice has no business trying to follow orthodontia, and one of the burdens of this society is to teach the

young man that if he is engaged in general practice he can not successfully follow orthodontia as a specialty. The field of the dental profession is too large for any man to master it all. At this time the profession of dentistry is divided into six or seven specialties, and the profession is learning that fact. The next problem is the training of men for these six or seven specialties.

Since there has been a four-year course for dental colleges in this country, I have advocated and favored the full dental course for three years, that is, three years devoted to general dentistry. During that time the student should be given a general idea of the whole of dentistry and should be studying his own qualifications, his own adaptability. His teachers can be helping him to make a study of himself and determine what particular line of dentistry his qualifications will best fit him for.

The fourth year should be devoted entirely to training that man in whatever specialty for which he is best fitted. You men as orthodontists know that there are a few men, if any, who are so gifted and possess sufficient qualifications to do orthodontia and practice the other specialties of dentistry and do them all well. So, if the young man learns in the early part of his career the line of work he is best adapted to, a long step toward a successful career will have been made. If it be teaching, let him devote himself entirely to teaching the science of dentistry. If it be orthodontia, operative dentistry, bridge work, or periodontia, let him learn early in his career that this is what he is fitted for, and he should devote his time to that work to become a real specialist in that line. I believe none of you will question the fact that the clientele that happens to come within that man's reach will be better off than they would have been had he gone on and tried to master and cover the whole field of dentistry. Of course, these remarks only apply to the man that is now a student and those who are yet to begin the study of dentistry. The situation as it exists among the practitioners in the dental profession today also needs attention.

The man who comes to the city from a rural district, to take a short course which he calls a postgraduate course, goes to a school where the whole curriculum is covered in thirty days. As a matter of fact, no school can cover a curriculum like that in an efficient postgraduate course in thirty days. It seems to me, postgraduate courses could be vastly improved if every school had six schools within itself; for instance, the Washington University School of Orthodontia, headed by the dean of the institution, with the specialty school headed by a man recognized the country over as a specialist in that particular line, and so on through the entire list of specialty schools. When a man comes for a course of postgraduate instruction, let him take whatever courses he prefers; let him spend six weeks or two months in studying a particular line of work. If he wants another course, let him remain longer in the same school. Throughout the five or six different specialty courses that man can stay long enough to get what he wants, learning what he can do himself efficiently as well as learning what he should refer to the specialist. A postgraduate course for the general practitioner arranged after that plan is an improvement over the postgraduate course which is given in thirty or sixty days' time. The general practitioner who wishes to specialize should take the fourth year, or specialty year, in the regular course if laid out as referred to above.

I have a vision of a time in the future when orthodontia will not be practiced as much as a corrective measure, but will be more in the line of prevention. I look for the day to come when possibly orthodontists will begin to receive these cases for treatment in the embryonic stage by attending to the mother's diet and keeping the life forces at the highest pitch in the mother, and if possible, arrange so that food given to the child may be natural food. The natural food the child may get during its infancy and younger days will certainly have a wonderful influence towards the development of the teeth and bones. The little fellow of four or five years who has not received this attention, who has not had the proper nourishment, or from some other unknown cause, may not have the mandible developed, as shown by failure of the temporary teeth to space properly between the ages of four and six years.

This is the age and now is the time when the general dentist ought to know that something should be done to stimulate proper development. Instead of that, the rural dentist perhaps never sees the child until the second teeth come into place, or out of place, and then nine times out of ten he advises the parents to wait until the child is twelve or fourteen years of age. The rural dentist needs education sufficient to teach him when the proper time for development of the mandible has arrived, and if spacing does not occur, it is important to send the child to a specialist promptly, before malocclusion really appears. The educated orthodontist will supply the forces which the vital force of the child has failed to supply and the permanent teeth may be directed into proper place with less difficulty.

I have appreciated for several years the good work this society has been doing. The product of this society has been confined too closely to its membership; others have not profited as they should by the work you men have been doing. You know that in the last generation, and especially in the last few years, yes the last few months, questions have ceased to be local ones; that matters have ceased to be local matters; that things have taken on not only a national but an international phase; in other words, a world-wide phase. If we teach things in this society which are good for us and good for the small percentage of humanity with whom we come in contact, they should be just as good for the rest of the race. I do not doubt that I speak the truth when I say that this society is one of the leading societies in its line, and if that be the case, would it not be well for the product of this society to be distributed over more than a local territory?

We have nations to the south of us whose interests and needs are the same as our own. The science of orthodontia is younger and less advanced than in our own country, and it has seemed to me for many years that in view of the rapid progress of dentistry and the dental specialties in this country, it would be a good thing from the standpoint of learning and fraternalism, for societies of this character in this country to invite the countries south of us to send representatives and meet with us. I have had some correspondence with some of the men in those countries and I am sure they would be delighted to receive an invitation from us to send representatives and join their forces with ours. Some of these men would become valuable members, and the sum total of their labors added to our efforts should result in greater blessings for us all and should add glory to our cause in the western hemisphere.

*Dr. William C. Fisher, New York City.*—I remember Dr. Kells last year in Chicago in answering Dr. Ottolengui's remarks made in the discussion of his paper said to him when he got through, "I don't care what you say, Rod, you are wrong." There was one point in the president's address or in the remarks of the gentleman who has just preceded me of which I can say, "I don't care what he says, he is wrong." He is wrong because he never was right. When a gentleman says that a general practitioner of dentistry has no right to practice orthodontia he is wrong, because he never was right. He has a right to practice orthodontia if he wishes, just as much as any so-called specialist. In fact, he is legalized to practice it in every state, and we hear the statement made so frequently "he has no right to practice orthodontia" until it is coming to be an abomination to human intelligence. The point is this: The general practitioner of dentistry may not be qualified to practice orthodontia, but he has a right to practice it, and if he is not qualified to practice it, the fault lies with the educational curriculum. And this society, as I stated last year and the year before, has to share its portion of the responsibility if the general practitioner of dentistry is not qualified to practice orthodontia. But let us stop saying that these practitioners have no right to practice orthodontia, because it makes them dislike us instead of coming to us for knowledge or enlightenment. Let us impress them with the fact that they are not qualified to practice it, and that we are willing to teach them, and they will come to us.

I agree with a great deal that has been said in reference to postgraduate work. Our Educational Committee should thank the gentleman for giving us many suggestions we can use in our committee report which we have not been able to compile.

He speaks of the fact that the rural man, the man living in a small district, should be educated. First of all, he makes the statement that the general practitioner has no business to practice orthodontia, and then he says he should be educated, (with which I agree), but you can not educate him in a specialty just far enough to convince him that he can not practice that specialty. You say educate him far enough to be able to differentiate cases so that he may send them to you. That, I fear, will never go. I take it, when a man comes to you from the rural district he looks to you for education and enlightenment in the modern science of orthodontia in order that he may practice it, and if you do not hold out to him the possibilities and prospects of practicing that specialty, he certainly will not come to you for knowledge. He may come to you for knowledge and gain sufficient of it to convince himself that he is not qualified to practice, but you can not give him a smattering education and expect to convince him that he is not qualified to practice something. Qualify him and he will then know his own limitations.

# PREVENTIVE ORTHODONTIA IN EARLY CHILDHOOD AND THE MANAGEMENT OF CHILDREN*

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LOOKING backward from the present day practice of early treatment of malocclusion, it is a far cry to the days of almost a quarter of a century ago, when the patients of the few orthodontic specialists consisted entirely of adults. The diagnosis and treatment of developing malocclusions in children had hardly been touched upon at that time, and the common advice of the dentist to the parents of children afflicted with malocclusions was to "wait until the permanent teeth were all erupted" before any corrective methods were started, a sparring for time piece of advice that at least afforded the dentist who proffered it a chance to temporarily evade the responsibility of an intelligent decision in regard to a case, and, if the dentist was beyond middle age when he gave the advice he would in all probability have one foot in the grave and be incapacitated for active practice when the patient, grown up, and with the permanent teeth all erupted should reappear for the treatment of the malocclusion.

Of a similar purport with intent to shirk responsibility by procrastination as a shield for ignorance is the advice to "let Nature alone and she will correct the malocclusion," with the result in most cases of the development of a serious malocclusion confirmed by long years of arrested or deficient growth of the dental arches, while the child is allowed to patiently wait without avail for Nature to begin her corrective operations.

Another fallacy of early dental origin is the theory of "extraction to make room" in the dental arch for teeth which are out of alignment. The advice thus freely given seems to have been handed down or inherited from one generation of dentists and their patients to another, so that, even at the present day, it not infrequently crops out in unthinking repetition of time-worn and obsolete phrases such as have been quoted.

In order to contradict this erroneous advice it is necessary to substitute certain facts gained from long orthodontic experience for the fallacious theories presented at the beginning of this essay. To begin with, it must have occurred to the most casual observer of today that the chief aim of both medical science and its branch, dental science, has changed from curative to preventive methods of treatment.

If this aim is to be carried out consistently, it follows that in order to prevent disease or deformity the beginning of all preventive and prophylactic measures must be directed upon the human organism from the time of its earliest infancy. "From the cradle to the grave" has now become the motto of the health hygienist, and thus it is that the child, and its environment, its work and its play, but chiefly its health, is the center of all absorbing interest in all branches of medicine, especially in orthodontia.

*Address delivered before the Toronto Dental Society at the King Edward Hotel, December, 1918. Published with corrections by permission of *Oral Health*.

The ideal physical condition which we all have in our minds as possible for the child is represented by such a state of normality of bodily function and structure that there is no room left for disease.

This mental ideal of the normal, physically perfect child encompasses health, beauty, and happiness. When one considers the charm of a well proportioned and well balanced face, with a winning smile, and displaying a beautiful row of pearly teeth, the mental picture becomes extremely fascinating.

Evidences of faulty respiration or of undeveloped and asymmetrical dental arches are inconceivable in the perfectly normal face; in fact, the whole external face reflects the evidence of an anatomically perfect internal face, with well developed dental arches, well developed nasal passages, and a healthy tonsillar ring. A step farther, and we may read as well a normally healthy body in its entirety, and a healthy mind, the expression of which is complete and care-free happiness.

Every mother desires such a delightful combination of health, beauty, and happiness for her children, and is willing to undergo any sacrifice to obtain it, but many mothers are doomed to disappointment, for either through hereditary influence or some acquired physical defects, the consummation of ideal physical perfection and beauty seems impossible in child development in many cases, except under peculiarly advantageous circumstances.

Beauty of the face is a composite of normally developed, well balanced features, and no one part of the face lends more attractiveness to this composite picture than perfectly developed teeth and dental arches, and no other part of the face can so deform and make ugly the lines of an otherwise beautiful face as the crooked, irregularly placed, or protruded teeth so often noticed in the mouths of children.

Take as an illustration a child exhibiting a malocclusion which is extreme in its manifestations of oral and facial deformity, and hardly amenable to corrective treatment because of the profound disturbance of bodily functions as a whole, a condition belonging to a type of cases which are occasionally observed in practice. The facial configuration of such a case is pathetically distressing with its open, drooping mouth, protruding teeth, and inharmonious facial lines, exhibiting a typical dullness of expression.

In this type of case the nasal passages are undeveloped, the nasal septum deflected, the turbinates enlarged, adenoids and enlarged tonsils are in evidence, the hearing is impaired and there is a muffled tone to the voice. Further examination of such a child usually reveals a narrow chest, and consequent lack of respiratory function, a stunting of growth and underweight, all evidences of a hard struggle for existence.

This is not an infrequent history, though in some cases it is perhaps less marked, of many of the children who are suffering from what has been aptly called the "vicious cycle" in the oral and nasal cavities.

However successfully the rhinologist can remove adenoids, tonsils and nasal obstructions for the restoration of normal nasal respiration and ventilation and drainage of the nasal sinuses, and the ophthalmologist relieve eye strain and assist in the proper correlation of eye functions, there still remains a further field of operations in orthodontia, which, because of its possibilities of

assisting in the development of the internal and external face, because of its stimulation to bone building in the maxillae and superimposed structures of the nose, and its consequent restoration of the functions of nasal respiration and normal occlusion, bids fair to fill an unique and highly important place in its possibilities of further physical benefit to the child.

But at this point it should be emphasized that the greatest benefit from orthodontic treatment is obtained in the early years of childhood, when such pathological changes as arrested development of the maxillae of the nasal structures are first apparent, and before these conditions are confirmed by several years of mouth breathing with its many ills, and before abnormal development of the internal and external structures of the face have shut the door to the best opportunity for effective treatment.

With added years the long continued effect of faulty respiration and lack of full function of the organs of the internal face, because of nasal obstruction, mouth breathing and malocclusion of the teeth results in the extreme of abnormal conditions in adult life. The lines of the face become sadly out of balance, the teeth are protruded, and the chest often is caved in. Such a case is manifestly too mature for ideal treatment, for although improvement in occlusion might be obtained, the bone is too dense for development of the dental arches and superimposed nasal structures, and it is obvious that the patient has waited too long before commencing corrective treatment.

However, in the treatment of a young child having the severe type of malocclusion associated with respiratory troubles, very pleasing results may be obtained in dental arch development, in better breathing conditions, a relief from the dull expression of mental hebetude, and the restoration of beauty to the face.

It must be evident to the close observer that malpositions of the teeth, generally speaking, are but objective symptoms of abnormal development of the dental and maxillary arches, usually exhibited in an arrest or deficiency of development, such as contracted arches with not enough room for the permanent teeth to erupt without crowding some of them out of alignment. In a simple case of deficient development of the dental arches, there is crowding of the teeth and overlapping in their effort to erupt in dental arches which are too small for them. A consistent corrective treatment should be begun during the growing age of childhood when a very pleasing result in the development of the dental arches and restoration of normal occlusal relations may be obtained.

Whether or not the general practitioner of dentistry ever practices orthodontia, it is essential for his professional reputation that he does not err in his advice to parents regarding the incipient malocclusions in their children's mouths, but he should either institute corrective measures himself in these cases or refer them to the orthodontic specialist as early as the malocclusion becomes evident.

The time when corrective treatment should be begun has somewhat definitely arranged itself. Since the roots of the deciduous molars enclose the crowns of the permanent bicuspids, any lateral pressure exerted in the expansion of the deciduous arch is transmitted to the permanent bicuspids, and it is therefore advisable to begin operations for the expansion of the deciduous dental arch some little time before the loosening of the deciduous molars preparatory to their being shed, or else the looseness or absence of these deciduous teeth will

postpone any attempts at arch expansion until the full eruption of the bicuspids, some time later.

Thus, in the anterior development of a lower dental arch, begun at the age of eight years, the deciduous cuspids and molars are intact and their roots have not begun to absorb, so that they afford a firm support for the appliances which may be adjusted for anterior arch expansion necessary because of the closing up of the erupting space of the permanent lateral incisors, often due to the premature extraction or loss of the deciduous lateral incisors.

Premature loss of the deciduous teeth in this manner should be provided for by the mechanical retention of the space necessary for the eruption of the permanent successors, otherwise the dental arch will contract in the spaces of these teeth, leaving no room for their eruption. The banding of the deciduous cuspids, and connecting these bands by a lingually soldered retaining wire, will prevent the malocclusion from developing, and is an operation that any dentist can easily perform.

In the event of the premature loss of a molar in the deciduous arch, as occasionally happens through necessary extraction, it is always advisable to guard against the subsequent contraction of the dental arch by holding the space of the lost tooth open by means of bands on the teeth on either side of the space connected by a lingual wire.

The prolonged retention of deciduous teeth works almost as much havoc in the developing permanent arch as the premature loss of these teeth, and the mouths of children should be carefully watched for such abnormal conditions. The most common instance of this condition is observed in the retention of the lower deciduous central incisors beyond the time for their natural absorption, their roots being unabsorbed and deflecting the erupting permanent centrals lingually. If there is room for the permanent incisors to erupt, the only operation necessary is the extraction of the deciduous centrals when the permanent centrals will of their own volition grow forward into the space.

The prolonged retention of the deciduous lateral incisors often deflects the crowns of the permanent laterals lingually, indicating the necessity for the immediate extraction of the deciduous lateral incisors, and possibly the slight expansion of the dental arches to obtain sufficient room for the eruption of the permanent lateral incisors into position.

The prolonged retention of the deciduous cuspids or of the first or second deciduous molars, when there is no evidence of the approaching eruption of the permanent successors, is a matter of some concern, since the germ of the succeeding permanent tooth is occasionally absent, and the extraction of one of these teeth without an x-ray diagnosis, showing the presence of the succeeding permanent tooth, would be questionable practice. In the absence of a permanent successor, as shown by the x-ray, the deciduous cuspid or molar usually does not suffer from the absorption of its root, and may do good service for a lifetime if properly cared for.

A case in point is one in which the dentist consulted me as to the advisability of extracting the deciduous second molars, they having been retained beyond the period of their natural loss. I made a radiograph of both lateral halves of the upper dental arch, and finding the permanent second bicuspids missing, ad-

vised the preservation of the deciduous second molars, and they have done good service for many years since the advice was given.

Supernumerary teeth are not infrequently the causes of malocclusion, which the dentist can prevent by the extraction of these teeth before they can cause a deflection or transposition of the permanent teeth.

Occasionally a supernumerary tooth will erupt alongside the normal tooth, which it will very closely resemble, and, as in a case, in which the normal lateral and the supernumerary lateral are so much alike in the form of their crowns that it is necessary to make a radiogram of their roots to determine which one to extract and which one to preserve.

The extraction of the first permanent molar is a common cause of malocclusion, for the teeth on either side of the space of the lost first molar drift into the space, and the dental arches collapse, causing malocclusion, in the same manner that an arch of masonry collapses when the keystone is removed. If I could leave with you one thought which I would wish to impress more than another it is this—*Guard the first permanent molar from the ravishes of caries from the moment of its eruption until it is safe from caries in the sulci and from caries caused by contact with the too often carious distal surface of the second deciduous molar.* It has been my experience that altogether too many first permanent molars have been lost, with consequent serious malocclusions resulting because of the lack of frequent dental care of these teeth.

Now, having pointed out a number of the so-called local causative factors of malocclusion, and suggested methods of prevention of serious malocclusion resulting therefrom, I wish to say a few words as to the management of children in office practice. It might be asked why it is that the dentist often dreads the necessary visits of children, while the orthodontist looks forward to their coming with pleasure. The reason for this is probably because the dentist's work is associated with more or less pain, while the orthodontist is able, through the use of delicately constructed and skillfully applied appliances, to avoid pain. If it were possible for the dentist to fill the cavities of deciduous teeth without any more pain than the orthodontist causes in fitting bands to the teeth, the children would not be so averse to the dental chair, and the dentist would take more pleasure in his work for the children.

There is a difference in the way different dentists handle children also; in a community one or two dentists will get a reputation for the skillful handling of children, due, no doubt, to their love for or better understanding of children, and for their avoidance of pain in caring for their teeth.

Fear, if present, should be banished at the first visit of the child, and, once banished, it should never be allowed to return through any rough handling or carelessness on the part of the operator. Tears are always near the surface in children, and are always the signal for an immediate armistice and cessation of hostilities as it were, when the cause of the tears may be discovered, and by means of a diversion of a frivolous nature, equilibrium of emotions is once more restored, and the work finished with a careful avoidance of the incident which caused the tears.

It is all a matter of psychology in dealing with children; their minds are like an open book, very impressionable, ready for suggestions of a nature which will

interest and please them, and if their thoughts are directed in the right channel they will forget that they are in a dental office, and will fill the office with their sunshine and laughter, and often drive away a fit of the blues.

Can you imagine a child with a mouth full of a plaster impression laughing until the tears ran down its cheeks? That happened in my office this last week, and was a pleasant diversion, although an impression need never cause any fear or disagreeable sensations if carefully and scientifically done.

Find out what is occupying the child's interest at the time, and converse with it on that subject, adding the ideas which it is looking for, stimulating its enthusiasm, thus proving to them that you are deserving of their confidence, and in the meantime, gaining their friendship.

Often a child will come in with a big idea; help him along with it. He will forget all about the office and everything that might be disagreeable about it in a few minutes, and your work will go along smoothly to its completion without a ripple to mar the surface. To illustrate, one of my little patients, a boy who usually has to be constantly watched because of his fidgety actions and boisterous behavior, announced to me when he came in the other day that he was going to be an inventor, his father having bought him a bench with a number of tools to work with. He and his companions had formed an inventor's club, and were going to invent things and make some money on them. I immediately encouraged the idea, showed him some inventions of my own, and finding that he did not know what to invent first, suggested to him that I needed a small white enamel waste receiver attached to the cabinet, to be worked with a foot lever much as a surgeon's waste receiver is operated.

He fell for the idea at once, saying that his mother had an old flour can which he could use to start with, and when they got things going they would give me one, I having told him of the possible great demand for them by the dental trade, and of the possibility of making some considerable money in selling them. We have established a relationship of camaraderie, based on business presumably, which will probably last until I can complete his case, but giving me a control over his actions which I could not so easily obtain any other way.

Suggest to the children the subject of conversation while in the office, and, if you are keen, you will find a way to interest them along lines they unconsciously suggest to you.

The mysterious always appeals to them, and a few sleight-of-hand tricks will not come amiss. Lighting the gas with a pencil attached to the electric lighting current never fails to elicit their interest and admiration. Pumping up the chair or running the dental engine often serves a similar purpose.

Stories have a remarkable effect, and it is well to keep a stock of them on hand for purposes of diversion. The office magazines should be chosen with the idea of interesting the children rather than the adult entirely. Even the furniture may be selected with a view to their needs, especially in an orthodontist's office.

It must be remembered that the child lives in a little world of its own, a world of effervescent joy and happiness, a combined mixture of birthdays, Christmas and other holidays, bed-time stories, candy, cake and ice cream, picnics and games.

For the adult to enter their little world means the discarding the mask of maturity, and donning the mask of youth, entering through the gateway of sunshine and laughter, frivolity and mirth, affection and sympathy, and conducting a children's hour in the office with that supreme understanding of the heart of a child that is expressed so nobly in the words of Longfellow:

Come to me, O ye children;
And whisper in my ear
What the birds and the winds are singing
In your sunny atmosphere.

For what are all our contrivings
And the wisdom of our books,
When compared with your caresses
And the gladness of your looks?

Ye are better than all the ballads
That ever were sung or said:
For ye are living poems,
And all the rest are dead.

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## A METHOD OF MEASURING THE RELATIVE HEIGHT OF THE PALATE

By Robert W. Gaston, D.D.S., New Orleans, La.

IN the correction of the cases of malocclusion in which there is a very decided narrowing of the upper arch, with its accompanying high palatal vault, it has, heretofore, been difficult to determine, after completion of the case and widening of the arch, whether the palate has actually been lowered or whether it simply has that appearance because of the dental arch having been widened.

Of course, by taking measurements from a horizontal plane passing through the occlusal surfaces of the molars to the highest portion of the palate, one can determine whether or not this line has been shortened because of the treatment, or, in other words, whether or not the palatal vault has been brought any nearer to the horizontal plane passing through the occlusal surfaces of the molars; but this measurement will not necessarily determine any change in the actual position of the palate as related to the rest of the skull; but simply the change of relationship that has taken place between the dental arch and the hard palate.

In making the measurements with the method that I have reference to, for the purpose of determining what actual changes take place in the height of the palate in its relation to the rest of the skull; I have selected two points, from which to measure, which are about as nearly fixed points as one can select; viz., the lower border of the external auditory canals, posteriorly, and the septum of the nose on a line with the lower border of the nostrils, anteriorly.

Now, considering that these two points are fairly well fixed, if we could draw a line from the anterior point of measurement at the base of the nose, to a line

joining the posterior points of measurement—the lower borders of the external auditory canals, we would have a fixed line from which we could make measurements that would determine any change in the height of the palate as related to the rest of the skull. In order to do this, I have made use of the face-bow as used in prosthodontia (Fig. 1). I have, however, made an addition to it, in the form of a set-screw placed in the shaft of the mouthpiece, (*a*, Fig. 1) which is to be screwed up and set at the location of the anterior point of measurement—the base of the nose.

In taking the measurements, an impression of the palate and occlusal surfaces only, of the teeth, is taken by placing softened modeling compound upon the mouthpiece of the face-bow and pressing into place, being careful to press it into the highest portion of the palate; it is then chilled, removed and carefully laid aside (Fig. 2). A mark is next made on each side of the face just in front of, and on a line with, the lower border of the external auditory meatus (*b*, Fig. 1);

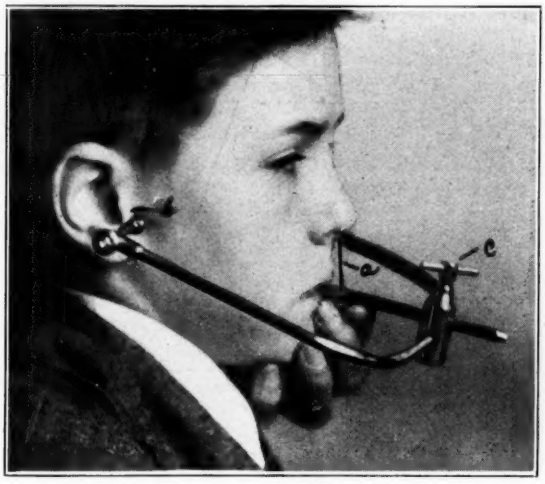


Fig. 1.

this is for the purpose of acting as a guide in placing the face-bow in position to secure the posterior point of measurement.

The mouthpiece, with impression, is then accurately replaced in the mouth and the patient or an assistant instructed to hold it in position by placing the finger in the center of the mouthpiece; the bow is now placed in position with the upper borders of the posterior ends placed directly on the marks that have been made upon each side of the face (*b*, Fig. 1), and the anterior portion placed over the rod of the mouthpiece; the impression is pressed tightly to place in the mouth, the set-screw of the bow (*c*, Fig. 1) is screwed up tightly upon the rod of the mouthpiece so as to hold their relations securely; the small set-screw, which has been added to the rod of the mouthpiece, is now screwed up until it touches the base of the nose on a line joining the lower borders of the nostrils (*a*, Fig. 1). The entire appliance—face-bow, mouthpiece and impression, is now removed, being careful not to alter the relations of any of the parts.

This now gives us an anterior and a posterior point from which to measure the position of the palate.

The point of the set-screw indicates the anterior point of measurement at the base of the nose, and, by joining the two condylar ends of the face-bow with a straight line, we have the posterior point of measurement, represented by the center of this straight line. This line may be simply a small wire joining the two condylar ends of the face-bow running just over the upper borders of these ends, as indicating the position of the lower borders of the auditory canals.

Now by placing a straight-edge from the tip of the set-screw anteriorly to the center of the wire posteriorly, we have the fixed line from which we can meas-

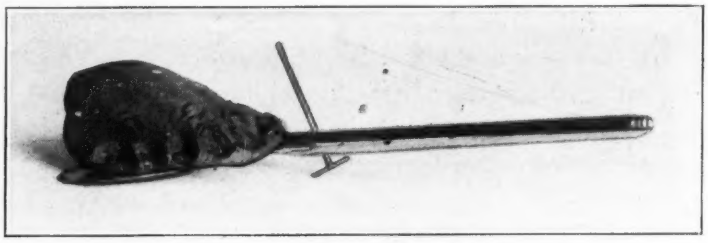

Fig. 2.

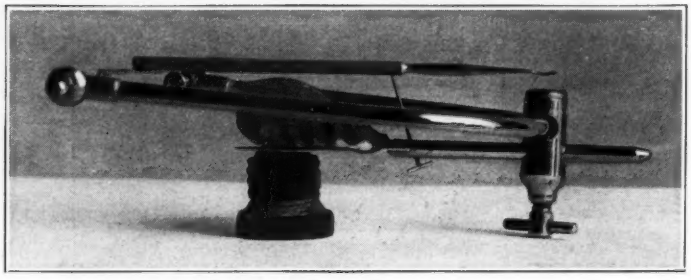

Fig. 3.

ure the distance to the highest portion of the palate as given in the impression (Fig. 3).

In those cases which I have measured, so far, of fairly normal mouths, the highest part of the palate has ranged from two to four millimeters below this fixed line, which, after allowing for the thickness of bone comprising the palate and floor of the nose would seem to indicate that the latter is almost directly in this line. I have not, however, used this method long enough to determine what change, if any, has taken place during the treatment of cases of malocclusion.

# *DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY*

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It is the object of this department to publish each month original articles on dental and oral radiography. The editors earnestly request the cooperation of the profession and will gladly consider for publication papers on this subject of interest to the dental profession. Articles with illustrations especially solicited.

## STEREOSCOPIC ROENTGENOLOGY—STEREOGRAPHS*

BY C. EDMUND KELLS, D.D.S., NEW ORLEANS, LA.

### NOMENCLATURE

IMMEDIATELY upon Roentgen's discovery of what he modestly termed the "x-ray," by means of which it became possible to take pictures of the invisible, it became necessary to give these pictures a name.

Skiagraph, skiagram, radiograph, radiogram, and others were suggested, and in this country the first name was the generally accepted term, for the first few years after the discovery of the x-ray.

Skiagraph is from the Greek, means shadow picture, and these are shadow pictures and nothing else.

A disposition was also shown by the early workers to honor the discoverer in this matter, and Roentgenogram and Roentgenograph were suggested, but these were time-consuming terms, and anything but euphonious words, and so, as has just been stated, the term skiagraph was mostly used. Later on, however, radiograph began to be used as well, and today both terms are generally used.

However, there was soon organized (about the year 1900) a society known as the American Roentgen-Ray Society, of which I was an early member. This association is in existence today and is composed of physicians who specialize in the use of the roentgen ray, so that the choice of the nomenclature of the science naturally falls within its province.

The American Roentgen-Ray Society is composed of roentgenologists. Its official organ is *The American Journal of Roentgenology.* When exposing plates

*Read before the Eighteenth Annual Meeting of the American Society of Orthodontists, Chicago, July, 1918.

to the influence of the x-ray, its members produce roentgenograms. At other times they use the roentgenographic methods. Roentgenoscopy is probably daily saving the lives or limbs of some of the best of those who have gone "over there." "Roentgenotherapy" is now practiced practically all over the world, or if not quite that, then at least everywhere where it is worth while.

While all this is true, yet there is no law in existence making it a misdemeanor for a dentist to call his roentgenogram, a radiograph or a skiagraph, or anything else he may choose to miscall it, and, likewise, when he writes a book he can also give to it any title he may select, but when we meet with such a one as "Oral Roentgenology," then we recognize the fact that its author, at least, believes in correct nomenclature.

As for myself, I apologetically admit roentgenogram always was "too many" for me, and so I always have used skiagraph, and probably will keep on with it till the end.

However, a strange occurrence can now be reported in this connection. Just before this country joined in the world-wide conflagration that is now going on, the "Intellectuals" of Germany, as they were called, and who were some ninety in number, signed a statement upholding the Kaiser in his course and approving of his conduct toward Belgium.

Now, as a rule, the ultra-scientist is no respecter of creeds, religion or politics, and mixes with neither, and, therefore, when these ninety "Intellectuals" thus went out of their sphere, it produced a mighty impression—and a mighty unfavorable one as well—upon the intellectuals of other countries, and since then there has been a tendency to drop everything that sounds German, and so today the word *skiagraph* is slowly replacing roentgenograph among roentgenologists. (This, of course, is only hearsay.) Whether or not they will ever succeed in getting away from the present very German nomenclature remains to be seen.

So while the invitation to be with you here this evening called for a demonstration of stereoscopic-radiography, it is to be hoped that the same demonstration under a different name will be acceptable—"A rose by any other name would smell as sweet."

When stereoscopic work was first undertaken, a shorter term than "stereoscopic skiagraph" was necessarily required for its description, and so I adopted the word "stereograph," which I have used ever since, and trust it will be acceptable to this society.

## DENTAL SKIAGRAPHY

When a properly prepared and protected photographic film is placed within the mouth and duly exposed to the influence of the x-ray, a plain shadow picture is the result, which, while limited in its character, is usually valuable to the dentist.

If we now apply the laws which govern stereoscopic photography to this same work, we increase the value of our pictures a hundredfold and even more, or, to be more precise, there is absolutely no comparison between a plain skiagraph and a stereograph, for while in a given case a plain skiagraph may happen to be of absolutely no value, a stereograph may reveal the conditions sought for.

DENTAL STEREOGRAPHS

All that it is really necessary to know now about this work is that two ordinary skiagraphs of the region involved must be taken upon separate films from points about two and one-half inches (the pupillary distance) apart. The distance from the film to the tube does not appear to affect the result, but probably from ten to twelve inches is the best measurement for this line.

The patient must not move during the process of changing the films, and the second film should be placed in about the same position as the first and *exactly upon the same plane*. Here lies the difficulty in taking many dental stereographs upon films within the mouth.

These stereographs upon films within the mouth were first taken by me more than sixteen years ago. It is unnecessary to occupy valuable time by the recital of the many trials and tribulations which were undergone, or to describe the various complex and difficult stages which were successively gone through with before this simple method now used was finally devised.

Fig. 1 shows a plain, everyday skiagraph, and before this picture can be of any use it must be interpreted. As a matter of fact, we hear much these days

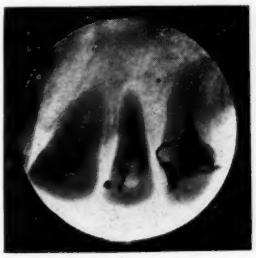

Fig. 1.

of the correct *interpretation* of skiagraphs, but the correct interpretation of the skiagraph is frequently a very uncertain proposition.

The reason Fig. 1 requires "interpretation" is that it is merely a shadow picture—does not explain itself upon its face—and as a matter of fact, it is impossible to make a correct interpretation because no one but the man who took it can recognize the actual conditions which it portrays. He and no one else can correctly interpret that particular picture.

Generally speaking, one could safely say that he recognizes the shadows of an upper central, a lateral and a cuspid. We have all seen so many pictures similar to this one that it would probably be safe to go into court and swear to these facts.

But what about the shadow which *may* represent a wire running into the root canal of the lateral? Where is the man who, looking at this picture for the first time, can go into court and swear whether the wire lies mesially or distally to the tooth, or in its root canal? Such a man can not be found, because in either case the shadow would be the same, and it is impossible to tell *from the picture* the relative position of this wire to the tooth.

To prove this statement, we will now look at two skiagraphs of the same

tooth, with a wire in different positions (Fig. 2, *A* and *B*), and no one can tell the difference between them, or the relative position of either wire.

But pair the picture shown in Fig. 1 with its stereoscopic mate, place them in their proper positions in a stereoscope, and after careful examination, there probably is not a man in this room who could not go into court and swear just exactly where the wire was when the picture was taken. This shows the value of a stereograph.

Let me quote from a paper which appeared in the *Dental Items of Interest,* February, 1917: "The writer firmly believes that stereographic work is not generally done by the strenuous advocates of x-ray work (this referred to root canal artists), because it is comparatively difficult.

"For illuminating a case under consideration, a plain skiagraph will com-

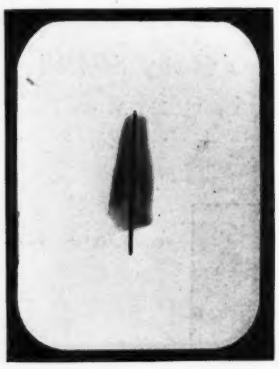

Fig. 2-A.

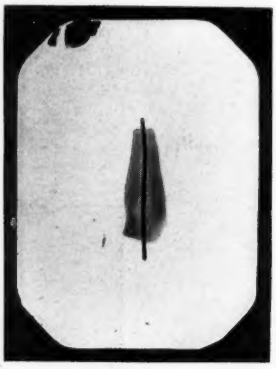

Fig. 2-B.

Fig. 3.

pare to a stereograph about as the moon on a cloudy night compares to the noon day sun in a cloudless sky, and he firmly believes that just as soon as some one discovers an easy way to take and view stereos, the plain skiagraph will be immediately abandoned and stereos will be used exclusively by any essayist who desires to illustrate his root canal work."

That was written some eighteen months ago, and mark well those words tonight—just as soon as that *easy way* is found, no orthodontist will again rely entirely upon the plain skiagraph, for to none of us is the stereograph more valuable than to these self-same orthodontists.

Who would look at these pictures (Fig. 3) and imagine that they are of one and the same tooth and taken within five minutes of each other? And yet

they are. This is a splendid example of what different shadows the same tooth will cast upon films when the pictures are taken from different angles, and yet a stereograph of this case locates the embedded tooth clearly.

Again see Fig. 4 where two laterals are seen to be erupting. Here the plain skiagraph was absolutely valueless because of the superimposing of one root shadow over the other, so that they were indistinguishable, and yet a stereograph showed very clearly which was the supernumerary tooth and which was the permanent lateral.

The identification of the supernumerary tooth was based absolutely upon the evidence of this stereograph, and upon its extraction the postmortem proved the diagnosis to be correct.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

In Fig. 5 is shown an unerupted cuspid, which, in reality, was in no such position as this misleading shadow would lead us to believe.

After a careful study of the stereograph of the case, a lancet was run down upon the point of the cusp *as intended*—not missing it by a hair's breadth.

Here in Fig. 6 is shown a lower molar, with its three root canals filled. The filling protrudes slightly through the end of one canal. There are two ways of finding out from which canal the filling does protrude.

1. Extract the tooth and hold a postmortem.
2. Stereograph the case.

### IMPACTED MOLARS

There are many cases of impacted third molars both upper and lower, which absolutely can not be diagnosed by an ordinary skiagraph, and yet a correct diagnosis is of vital interest to the patient.

In Fig. 7 is shown such a case. This patient was about thirty years of age, and there was no visible evidence of the third molar. She was a stranger and came to have her mouth put in order.

The bridge partly shown was naturally condemned on sight, greatly to her surprise, as she thought it was such a fine piece of work and had never given her any trouble, and a skiagraph was taken in order to reveal the possible miseries hidden below. The impacted molar was thereupon accidentally disclosed.

Then came a history of pain and suffering in the back of her head and neck, for which she had been treated and treated off and on for years, all of which was undoubtedly traceable to this tooth.

The whole course of treatment must be decided upon by the actual relative positions of the second and third molars. If the third molar had burrowed its way into the second molar, the second molar should be extracted, whereupon the

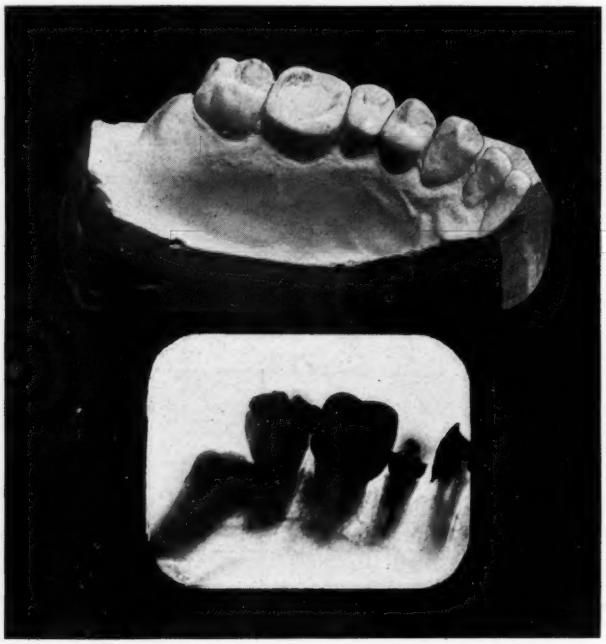

Fig. 8.

third molar would eventually erupt and possibly become a useful member of the dental family.

But if the third molar lay either lingually or buccally to the second molar, then it, itself should be removed.

There were two methods of discovering the actual conditions:

1. Cutting down upon and exposing the third molar—not such a pleasant pastime for the patient if the process should show the second molar must be removed, and

2. The stereograph.

In this case the stereograph was taken and it was shown that the two mesial cusps of the third molar *straddled* the buccal corner of the root of the second molar. The third molar was thereupon cut down upon and removed, and, as far as could be observed, the second molar root had not yet been injured.

In Fig. 8 is seen an upper impacted third molar, a stereograph of which would be invaluable.

Many other such cases could be cited, but these should suffice to prove conclusively the advantages of stereographs.

### THE TUBE CARRIER

Upon taking up the work of making dental stereographs upon films within the mouth, the first obstacle to be met was that of the tube carrier, as there were none upon the market at that time that were suitable to me, and so one was improvised, only to be changed from time to time.

One of the tube carriers devised for this work is here for use tonight, and will be described as used.

Before going further it might be well to call your attention to the fact that as the demonstration proceeds, it will be but natural for you to think, "Why is this particular detail done as it is?" and, "Why is not that particular step taken differently?"

The facts are, gentlemen, that there are many ways of varying each and every detail, and they have been changed frequently during the past fifteen years. But this evening there will be shown only one of the ways in which rather satisfactory dental stereographs can be taken, and is the way in which they are taken now-a-days.

### THE FILM

The Eastman positive film is used for this work. It is ordered in the 4x5 size, which is well adapted to the purpose, as any size required for the case in hand can be cut from it.

### PREPARATION OF THE FILM

We first cut two black paper patterns of just the size of the films to be used. We then cut two pieces of ordinary red dental rubber, just about one-eighth or one-sixteenth of an inch larger all around than the paper pattern, and we lay them on the black end of the preparation board. Next we cut two pieces of Doherty's No. 14 black dental rubber of the same size as the red rubber, and we lay them with the black paper patterns on the white end of the board. In the darkroom these various objects can be plainly seen against their contrasting backgrounds.

Four films are now cut exactly of the size of the paper pattern. One corner is clipped off from each of two films, so as to permit of their identification, and they are laid upon the red rubber, emulsion side up. The other two films are now laid, one over each of the first ones, emulsion side up. The black paper pattern is now placed over each film, and the piece of black rubber is placed over them. The edges of the red and black rubber are next pinched together with pliers, and we now have a waterproof, light-proof packet ready for use, the black rubber surface to be exposed toward the tube.

### IDENTIFICATION MARK

Upon one corner of the black rubber of one of the packets is placed a small metallic letter *L*, or some other identification mark, and the films are now ready for use.

PREPARATION OF THE PATIENT (WIRING OF THE TEETH)

In the early days it was frequently found difficult to register the two stereographs when trying to view them in the stereoscope. Placing of fine wires around two of the teeth upon opposite ends of the region to be stereographed before the picture was taken, was found usually to overcome this trouble.

This method is used when no fixed planes are used. When a fixed plane or a tunnel is used it is better to secure a fine brass wire in some suitable place on it

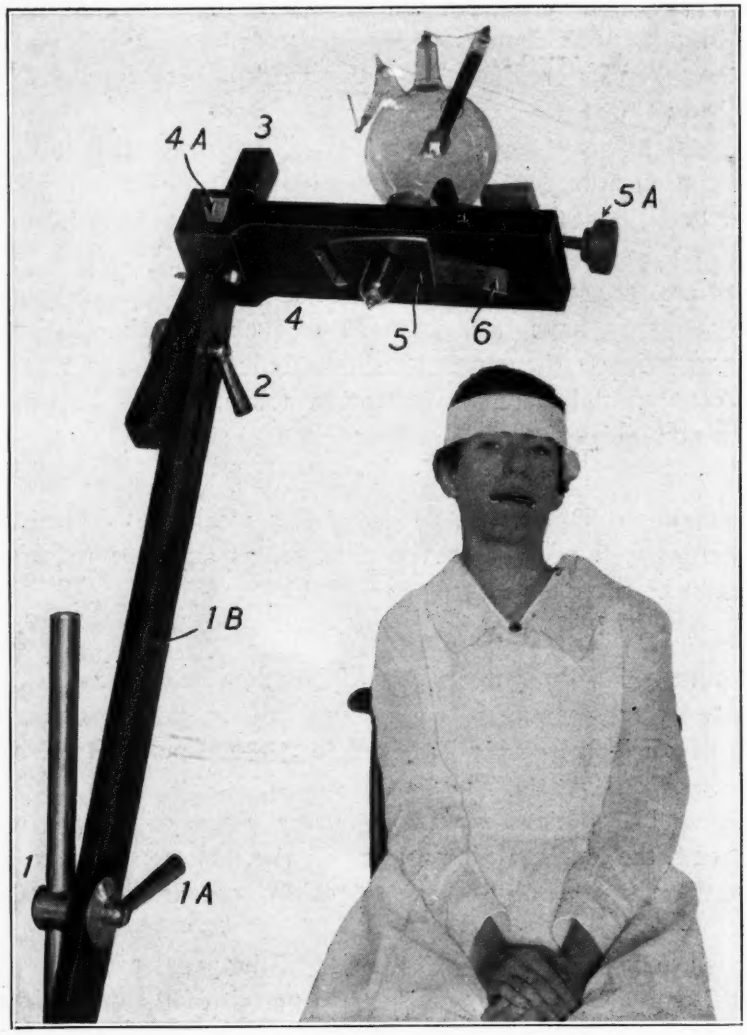


Fig. 9.

instead of the teeth. The result is the same, and by doing so, the patient is spared the annoyance of the wires.

THE TUNNEL

A tunnel as here shown is made of aluminum. Soft modeling compound is attached to its lateral edges and adjusted in position in the mouth, while the modeling compound is still soft. The teeth are closed gently into it, thus holding it firmly in place.

The films can now be slipped in and out of the tunnel without much danger of the patient's moving.

ADJUSTMENT OF TUBE (FOR THE UPPER JAW)

The patient is now seated in a comfortable position and the head tightly bandaged to the headrest. To use the usual expression, the tube is now "focussed" upon the center of the region to be taken. However, as the x-rays

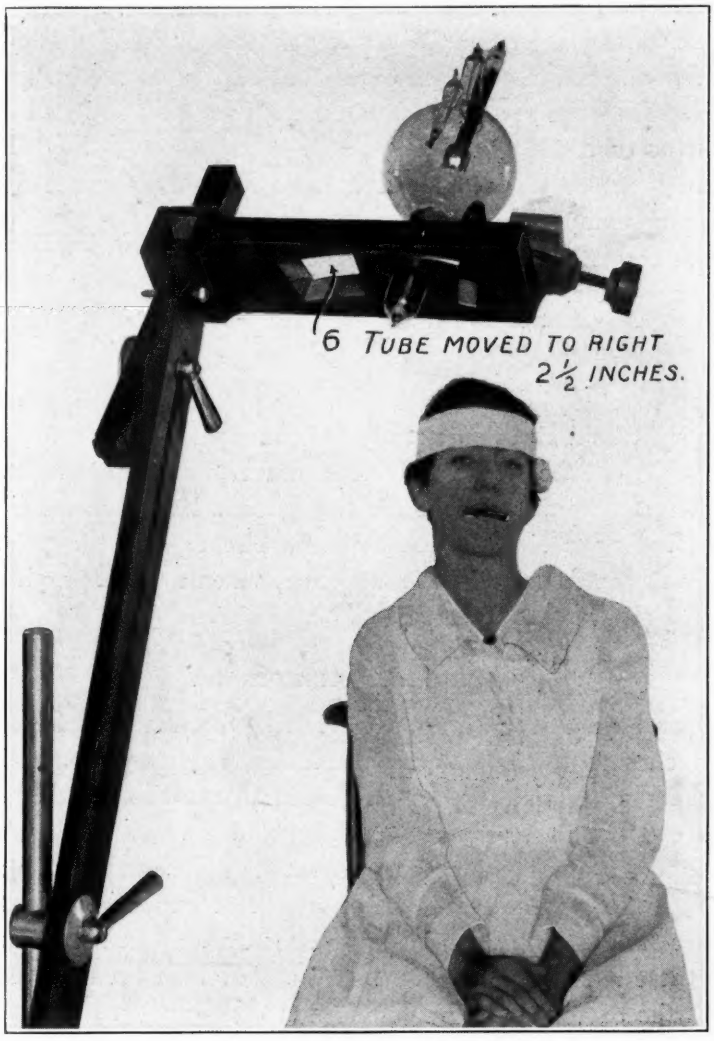


Fig. 10.

can not be "focussed," it would probably be more correct to use the word "centered."

In Fig. 9 is shown the stand used for taking stereographs and patient in position.

*1* is a metal rod standing up in the center of the conventional tripod on rollers.

*1 A* is the clamp which secures the slotted upright (*1 B*) at any angle and allows it to be raised and lowered.

*2* is another similar clamp, which in turn locks *3*.

*3* is a solid square wooden bar adjustable to any desired angle, and it slides up and down in the slot *1 B*.

*4* is a heavy section of wood fitted as shown to be the adjustable tube-carrier itself. It is shown slipped on to the square member *3*.

*4 A* is another square hole standing at right angles to the first one. If the tube carrier *4* is secured to the square bar *3* by means of this hole, then we have the tube carried at right angles to the position here shown. It is in this latter position when taking stereographs of lower teeth. This double adjustment facilitates the taking of stereographs of various regions of the jaw.

*5* is the sliding member which travels a distance of two and a half inches and supports the tube.

*5 A* is an ordinary tube clamp secured to *5*, holds the tube firmly in position, and, of course, moves with it.

*6* is a slot cut on a circle, so that when the tube is shifted, it travels along the segment of a circle.

The patient is shown with head bandaged to the headrest—tunnel and films in place ready for the left eye exposure.

In Fig. 10 tube has been shifted along the path of the circle two and a half inches to the right, and all is now ready for the right eye exposure.

In practice, the tube would be placed nearer to the patient and at a little different angle. If the actual pose for this picture had been made, the various details would not have shown clearly in the picture, but the principle is just the same, as was demonstrated at the meeting, when a stereograph of the upper third molar region was satisfactorily taken.

### TAKING THE STEREOGRAPH

The proper adjustment of the tube having been accomplished, it is now shifted 1¼ inches to the left, and the film bearing the letter *L* is slipped in position in the tunnel, and the tunnel placed in position in the mouth. The current is turned on, the exposure is made, and we now have the picture as seen from the left eye. The film is removed, its mate put in its place, the tube is shifted 2½ inches to the right, and the second exposure for the right eye is made. Care should be taken that both films are exposed equally. It is possible to take these stereographs by having the films held between the teeth without the use of the tunnel, and many have been taken in that manner.

Any region in the upper jaw can be stereographed with the films placed between the teeth in this manner, but when it comes to a region in the lower jaw, we are up against a different proposition.

Remembering that both films must be held upon the same plane, the method here used is as follows:

### THE FILM HOLDER (FOR THE LOWER JAW)

In Fig. 11 is shown the various steps for making a guide plane for taking stereographs of teeth in the lower jaw.

(A) A piece of aluminum plate, No. 30, B. & S., is cut to this pattern.

(B) The slotted edge is then turned over to about a right angle and the lugs at each end bent over—all as shown.

(C) The slotted edge is then slightly warmed over a Bunsen flame and a piece of softened modeling compound is attached to it. This is placed in the mouth, plane surface pressed against the inner surface of the jaw and held there while the compound is moulded over the crowns of the teeth. The patient then closes down carefully upon it—mouth opened—the plane again

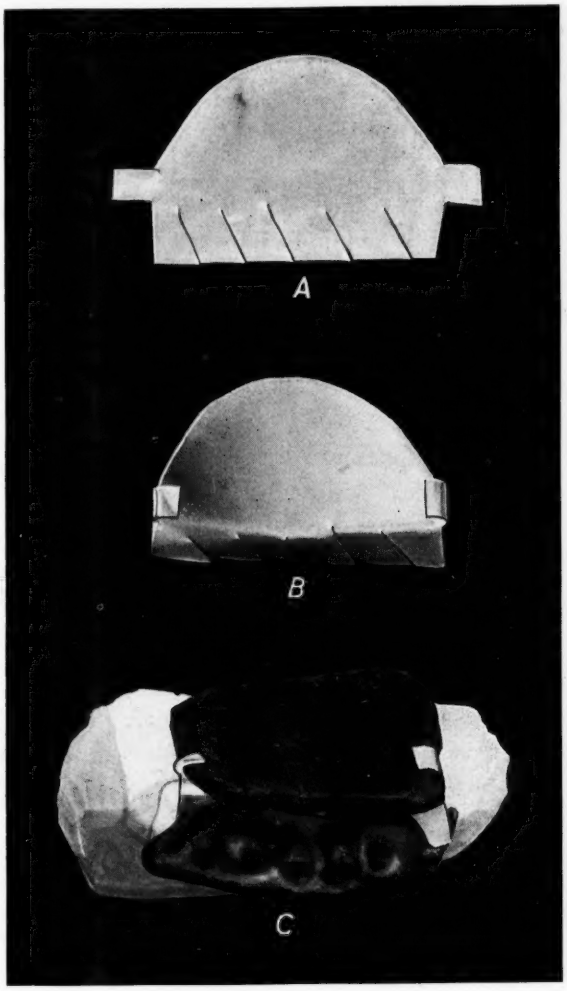


Fig. 11.

adjusted in place in case it had moved away during the occlusion. It is then cooled by means of a jet of cold filtered compressed air or a spray, and then removed. The finished plane in position on a model is here shown.

The films enclosed in black rubber, as previously described, have been clamped in place by the little lugs at each end.

The film holder is now placed in position in the mouth, the teeth closed gently against it so as to be assured it goes to place, and the exposure made. The plane is then removed, film taken off, another one put on, the holder re-

turned to the mouth, where it must be replaced in its exact former position, which is readily done, and the second film is thus held on the same plane as was the first, and the exposure made.

With the patient placed in a comparatively comfortable position, so that she can sit immovably during the process, and care being used to carry out these details without the loss of any unnecessary time, perfectly satisfactory stereographs can be thus obtained of teeth of the lower jaw.

### DEVELOPING THE FILM

We now have two pairs of exposed films, and it is well to develop one pair first, using the utmost care to bring them to the same density, and the two pairs can be identified afterward by the one being clipped and the other not.

### THE STEREOGRAPH

Each finished film is now placed between two pieces of glass of a suitable size and the edges bound with gummed paper, which renders them substantial, keeps them flat, and allows of their easy handling. They are then placed upon the top of the stereoscopic box, by means of which they are transilluminated. While adjusting the focus of the lens the films are carefully moved about until they register, at which instant their beauties burst forth.

By means of this stereoscope, a practical examination can be made in a very few moments after the films are dried, but one not accustomed to its use finds it rather awkward and unsatisfactory, and it is not a very satisfactory apparatus for exhibiting one's work to others.

To overcome these drawbacks, the stereoscope now shown was devised. The two films are first secured to a piece of glass in their proper relative positions and photographed on a plate. From this plate a transparency is made which fits this stereoscope.

This transparency can be quickly adjusted and viewed with satisfaction in any parlor stereoscope by anyone, but the special stereoscope here shown shows it to better advantage, as all side light is cut out.

### MOUNTING THE FILMS

If the films are of just the right density, they may be properly placed upon a sheet of glass by means of gummed paper strips. All the rest of the plain glass is also covered with this same paper, and quite a satisfactory transparency results.

### MAKING PRINTS

It is possible, of course, to make the usual prints from the films and place these upon mounts to fit an ordinary parlor stereoscope, but so much of the beauties of the original films are lost in the process that one hardly has the heart to spoil his work in this manner.

### REVERSING THE FILMS

There is a most wonderful feature about this work. If the left eye picture is placed on the left, and right picture on the right of the stereoscopic box,

upon looking at them it will be found that we are looking through the jaw from the same direction that the rays were thrown. In this case, for instance, with the picture so placed, we appear to look down through the buccal plate, through the alveolar process, and so on. Everything appears just in these relative positions. As a matter of fact, these pictures present a *buccal aspect* of the case.

But let us reverse the pictures, placing the right eye picture on the left and the left eye picture on the right, and a most wonderful transformation has taken place, for now we are looking through the jaw from a position within the mouth and now they present an actual *lingual aspect.* Strangest of all is the fact that viewing pictures in this direction is the most satisfactory of the two, so that the pictures are always reversed for reading.

### THE LINGUAL ASPECT

Mr. Chairman, did you, sir, ever go up to a fine old bull in the middle of a forty-acre lot with not a tree in sight, and shake a red flag in his face? No? Well, of course not. That certainly was a foolish question, because if you had done so, you would not be here this evening listening to this intellectual feast.

Well, at any rate, you well know that the bull's feelings would have been

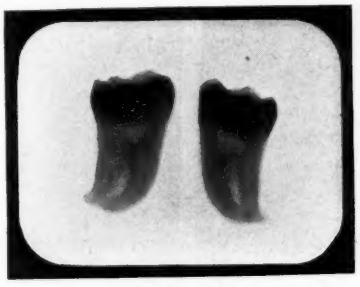

Fig. 12.

somewhat ruffled at such a performance, and that's just what happens to me when a patient comes in, and produces a lot of *dental radiographs* labeled "Lingual Aspect" for my inspection.

We will now study two views of the same tooth (Fig. 12). The one is a "lingual aspect," according to the aforesaid *radiographers* and the other, therefore, must be a "buccal aspect," as it is the reverse of the first.

Is there anyone present who can tell which is which? Undoubtedly not, because both being merely skiagraphs, there is no appreciable difference between them.

Evidently there is a small filling in the tooth, and it could be on the buccal surface, or it could be on the lingual surface. Who is there here who will scrutinize these pictures carefully and venture an opinion as to which surface the filling really is upon? I hope some one who does this "lingual aspect" work will have the nerve to try.

Now, Mr. Chairman, the term "lingual aspect," as applied to a plain skiagraph, must be incorrect, and let us hope that all those who have used the term heretofore will discontinue its use in the future. It is certainly a reflection upon a man's standing to have such a misnomer accompany his work, and

unless he can differentiate between this buccal and lingual aspect of the tooth shown in Fig. 12, misnomer it must be.

However, to a stereograph there certainly are both lingual and buccal aspects, according to how you view them, as has already been explained, and there is no camouflage about that feature, as they are readily distinguishable from one another.

It is suggested that if your purely shadow pictures must have a label, that the words "buccal exposure" be used instead of "lingual aspect." By buccal exposure is meant that the buccal surface was exposed *directly* to the rays, and conversely, "lingual exposure," that the lingual surface was directly exposed.

The word *directly* is used with a purpose, as both surfaces are actually exposed to the rays as they pass through the tooth.

It would naturally appear that such terms, equally as distinctive, could be applied to nearly all parts of the body. Instead of saying that a skiagraph was taken *anteroposteriorly,* it would only be necessary to say *frontal exposure.* "Palmar exposure" of the hand would clearly and concisely indicate which surface of the hand lay against the plate, and so on.

A very great drawback to stereoscopic work is that it can not be shown upon a screen and thus be visible to an audience. Each stereograph must be viewed in the stereoscope by one person at a time.

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[Dr. Kells here made a clinical demonstration of making stereographs.]

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Mr. President and gentlemen, you have now seen the whole process of making dental stereographs upon films within the mouth, as practiced by me. You will note that, as compared to the taking of plain skiagraphs, the process is tedious and difficult, but bear in mind that when a case presents of which the plain skiagraph spells failure, and the stereograph means success, there can be no such words as "tedious" and "difficult;" the ends attained make the work a pleasure and the satisfaction of changing failure into success should allow the easy road to failure to be overrun with weeds, while the more difficult path to success is being beaten down to hardpan.

If what has been shown this evening has proved of interest to the members of this Society, I will have been amply repaid for the efforts made.

DISCUSSION

*Dr. R. Ottolengui, New York City.*—I wish to take this opportunity to discuss the terminology which Dr. Kells has used in his paper this evening. In the first place, I will begin with the roentgen part of it. Dr. Kells cited the fact that these pictures were first called skiagraphs and radiographs. Then he told us that when the American Society of Roentgenology was formed they coined a set of terms beginning with roentgen, and he claimed that this society had a right to do that. That will be my first dispute with him.

If any one should ask me what my chief occupations are, I should say that I am an amateur photographer, an amateur philologist, an amateur orthodontist, and a professional dentist; professional at least in the sense that I profess a good deal. (Laughter.)

I want to speak to you now from the two standpoints of an amateur philologist and an amateur photographer, and first as a philologist. I became a member of the

Section on Philology in the Brooklyn Institute long before Roentgen discovered the x-ray. Consequently, I may say that the rules for coining words existed long before Roentgen discovered the x-ray, and therefore long before the American Society of Roentgenology was organized. In the realm of science one scientific society has no right to break the rules previously and correctly established by another scientific society.

In philology which means a love of words, there are definite rules for making new words, and one of the most rigid of these rules is that in coining a word you can not combine from two languages, with few rare exceptions, where Latin and Greek may be used together, largely because in the Latin and Greek there are a number of words in common. But even this is undesirable and should be avoided if possible.

Another rule is that one must not coin a word out of a proper name. That, however, is largely a matter of taste more than a set rule. Philology tells us not to combine two languages to make one word and not to coin a word out of a proper name. Such a word as "Roentgenology" breaks both rules, because *logos* is from the Greek and Roentgen is a German word and a proper name. So much for roentgenology.

When Dr. Kells tells us that the Roentgen Society had the right to create all these Roentgen terms, I am forced to disagree with him. The Roentgen Society could with propriety honor Roentgen by dropping the term x-ray and calling it the "Roentgen ray," but there they should stop.

### SKIAGRAPH

Let us now discuss this word "skiagraph." Dr. Kells tells us that "skiagraph" is from the Greek, means "shadow picture," and "these are shadow pictures and nothing else."

This word skiagraph, from *"skia,"* shadow, and *"grapho,"* to write, was in the dictionaries before the roentgen ray was discovered, and probably was originally coined for use in its astronomical sense, in which science it means to "determine the time of day by means of a shadow." Literally, to "write (the time) with a shadow." In the early days of the use of the roentgen ray it was used to mean these pictures taken with the roentgen ray, and for this reason I have no doubt that it can be found in dictionaries of today defined just as Dr. Kells has defined it. Nevertheless, I contend that the more recent term "radiograph" is a better term, for which reason "skiagraph" should fall into disuse.

Let us question Dr. Kells' statement for a moment. Is the picture under discussion a "shadow picture?" I think not.

A shadow is a darker area cast upon an illuminated surface by the interposition of an opaque body between that surface and the source of light. But more than that is to be considered. The quality of the surface upon which the shadow falls is a factor in producing the shadow. It must be an opaque surface. Shadows are not seen upon transparent surfaces. Is a photographic film opaque? If it were and if these pictures were "skiagraphs," shadow pictures, we could make only one at a time. Yet we know that we can make ten as easily as one.

A shadow is almost if not entirely of one shade. And, what is more important, the gradation of the shadow does not depend upon the so-called "density" of the object, but upon the distance between the object and the surface which records the shadow. Try a simple experiment. Hold a wooden ruler between an electric light and a white wall. Move the ruler slowly away from the light and toward the wall, and observe that the shadow increases in its intensity as it approaches the wall. Certainly, its molecular arrangement is not altered.

To be scientifically accurate, we could make the following differentiations: A photograph is produced by the action of light reflected from an object, through a lens, upon a sensitized plate. A radiograph is produced by the action of the roentgen ray passing through an object and affecting a sensitized plate. A skiagraph is produced by interposing an opaque body between the source of light and an illuminated opaque surface, which thus records the shadow cast.

Hence I would be willing to have Dr. Kells use the term skiagraph for a roentgen ray picture of a gold crown or other object composed of material which is radiopaque. But those pictures used by him to demonstrate his views on "lingual and buccal aspects" are true radiographs because the internal anatomy of the tooth is disclosed.

I hope that I have finally convinced Dr. Kells of the error he makes in adhering to this word "skiagraph," but I fear not, because I have frequently written several pages to Dr. Kells trying to convince him in certain matters, and in reply I usually have re-

ceived merely a sort of telegraphic form-letter reading: "Dear Otto,—You are wrong. Kells." (Laughter.)

*Dr. Kells, (closing.)*—I ought not be held responsible for the vagaries of mind and odd ideas in Rod's head. (Laughter.) It is not my fault if he writes four or five pages of argument and I find he is wrong. We are friends and always have been. Is it not a great deal better to write him back, "You are wrong," than to write four or five pages and argue with him and let him think he is right? He might misinterpret what I said. (Laughter.) If I had known that Dr. Ottolengui was going to criticize my terms, I would have skipped that part of the paper in reading it, because I frankly confess that I am not in it on an argument with Dr. Ottolengui on anything. I never saw another man who could take absolutely nothing, the worst end of an argument, and build up such a fine argument and make everybody believe that he is right except the fellow he is arguing with or against. (Laughter.) He may tell us all that he chooses, on nomenclature and philology, but, nevertheless, this time he is wrong.

A skiagraph is certainly not a photograph. It is a series of shadows.

It does seem to me that a society of orthodontists ought to be free to coin the words necessary in their literature which pertains to orthodontia.

When it comes to x-ray work, if there is a national society composed of men who do x-ray work, it seems to me it is within their province and it is their privilege (I may be wrong about this), to make a terminology for themselves. I do not believe that outsiders should do it.

I am sorry that the only thing that really interested you this evening has been terminology. I came nine hundred miles since yesterday morning to present this subject, which I thought would interest you, but it looks as though I am to be disappointed.

I threw on the screen this evening a double picture and I said, "Who is there here who would believe that these two pictures were one and the same tooth?" I did not intend to tell this, but I am going to do so because it may have some weight. That was the picture of a little girl eight or ten years of age, and that stereoscopic picture was taken eight or ten years ago. I was then regulating teeth. Her father brought her to me and wanted me to do the work. I took pictures and expected to do the work, and before I started the work he wanted me to guarantee to bring the tooth down. I said certainly not. I told him I would guarantee to do my best, but I would not guarantee to bring the tooth down. I did not get the work. He took the girl to a capable orthodontist who guaranteed to bring the tooth down. This man worked on her four years, and at the end of the fourth year the tooth was not in sight, and he went in and cut the tooth out. That patient is wearing an artificial substitute today. If that man had had stereographs of that case from time to time and worked with them, I believe he would have gotten that tooth down.

I showed another picture of the case of a little girl that was brought to me a few months ago. The tooth was nowhere where a plain skiagraph showed. I took a stereograph. I cut down upon the cusp, and that tooth will be brought down and in line.

I have had cases in my practice that would have been failures without the stereograph.

*Dr. Flint.*—By taking pictures at two different angles, can you locate a cuspid that is impacted?

*Dr. Kells.*—With a plain skiagraphic picture I do not say that it can not be done, but I know I can not do it. Take the case of which I showed two pictures; neither one of those pictures was worth a cent. I am referring to the little girl with the two upper laterals (Fig. 4). You could not make a diagnosis from a skiagraph because the roots overlapped. We could differentiate, however, with the stereograph. Just imagine a beautiful little girl, eight years of age! What a mistake it would have been to have extracted that permanent lateral, leaving in an inferior or constricted supernumerary tooth. She would have been marked for life.

No one can appreciate the importance of this work until he studies it, but if you examine a stereograph you are not looking at simple shadows. Take a stereograph of the skull and you will find it is wonderfully beautiful. You see the various bones clearly. You see the teeth floating, as it were, in a semi-transparent substance.

Lastly, I wish to thank you for the marked attention you have given to me in presenting this subject. (Applause.)

# *DEPARTMENT OF*
# *ORAL SURGERY AND SURGICAL ORTHODONTIA*

**Under Editorial Supervision of**

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## SOME PATHOLOGIC CONDITIONS OF THE MOUTH AND THEIR TREATMENT*

By Chalmers J. Lyons, D.D.Sc., Ann Arbor, Michigan

THE subject of pathologic mouth conditions is one of tremendous proportions. It is one that has been given too little attention in the past, by the general practitioner. It is a lamentable fact that in the examination of the mouth, as made by the average dentist, the discovery of carious teeth is uppermost in the dentist's mind and his examination is completed when the tooth surfaces have been explored. The thought of making an examination of the mucous membrane, tongue, tonsils, pharynx, and salivary glands, is not usually considered. Blair[1] says "until the much desired cancer specific is discovered, it is mainly to the educated dentist grounded in general oral pathology, who makes a complete survey of the whole mouth that the medical profession and the public must look to reduce the now increasing death rate from cancer of the mouth."

The writer wishes to call to your attention some of the pathologic conditions of the mouth and their treatment and to emphasize the great responsibility that the educated dentist must assume in his respective community. Making a judicial dental diagnosis is not always a simple procedure and very often the skill and ingenuity of the operator is taxed to the utmost in working out the chain of evidence upon which he must base his decision. A clear understanding, by the dentist, of the value of symptoms of disease which he sees and of those described by the patient is of vital importance in making up this chain of evidence. One of the advantages of the dentist with long experience, over the younger men, is the ability of the older man to grasp the essential details of the condition at once. Much of this ability is gained by a gradual process through years of practice and observation. It is true that in recent years the x-ray has

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aided us materially in our diagnostic work of the mouth: yet, too many men in our profession are depending entirely upon the radiograph in making a diagnosis. While we concede that the radiograph is indispensable in dental practice today, yet it should form only one link in the whole chain of evidence in formulating the diagnosis.

The history of present and past illness, signs and symptoms are very important in determining the diagnosis. It has been the observation of the writer that the best diagnosticians, in both medicine and dentistry today, are those men who have been trained to objectively and subjectively differentiate the pathologic from the physiologic and use the x-ray only as a further means of arriving at a definite conclusion. Do not misinterpret the meaning here. The use of the x-ray must not be depreciated. Yet the plea which is made is that we must not overlook the fact that the radiograph is not the picture of the pathology, but only a record of the shadow of the tissues and the extent of the pathologic involvement which appears upon the film will depend largely upon the angle from which the radiograph was taken. This, you will readily agree, is not sufficiently definite to wholly rely upon in forming a judicious and conservative diagnosis.

## PAIN

One of the most perplexing problems that confronts the general practitioner is obscure pain localized in the jaws. These pains are frequently referred from some lesion distant from the point of manifestation. Many times healthy teeth are sacrificed in the endeavor to eliminate the possible source of socalled neuralgia, when the source of irritation is remote from the seat of pain, but misinterpreted by the patient. Goldschider has put forth a theory that in the Gasserian ganglion there are certain nerve cells performing a dual role. These cells have either split fibres or two separate nerve fibres, one running in one division of the fifth nerve and the other in one of the other divisions of the same nerve; thus pain may be manifested in the region of an upper cuspid or incisor tooth when the source of irritation is in a lower molar. A short time ago the writer had a patient with pain in an upper cuspid tooth when the source of irritation was found to be in a paratonsillar abscess, or on a branch of the lingual nerve and referred to the upper cuspid on a branch of the maxillary nerve. It is not an uncommon occurrence to find referred pain from impacted or unerupted third molars. How frequently do we find headaches relieved after the removal of impacted teeth? The practical lesson to be derived from this is that the dentist should be on his guard against a number of sources of error in diagnosis of pain and that these cases demand of the dentist a most thorough knowledge of the anatomy of the field in which he labors. A slight derangement of nervous function may produce the most unexpected consequences in the most unexpected places. With our present methods of nerve blocking, if the source of irritation is in either the second or third divisions of the fifth nerve, a definite diagnosis can usually be made by blocking off a section of each branch at a time and observing the results. In cases of severe tic douloureux often the teeth are needlessly sacrificed by the dentist in the endeavor to give the patient relief. This practice is so common that a large majority of the patients seen in the hospitals of the University of Michigan, who have suffered with tic for any length of time, have

edentulous jaws. Our knowledge of dental and oral pathology should be of such a high order that teeth should not be sacrificed unless we are reasonably sure that the patient is going to be benefited.

Hutchinson[2] says: "The extraction of teeth with a view of relieving or curing true epileptiform neuralgia or tic douloureux is a pernicious and useless practice." There exists no valid evidence to regard trigeminal neuralgia as a spreading neuritis of dental origin. It is contended by many able brain surgeons that the etiology of tic douloureux is of central origin and the removal of the teeth would in no way be of any assistance in the relief to the patient. Our experience in the past has been that injections of alcohol or even neurectomy for tic douloureux is of little more value than extraction of the teeth in offering permanent relief. It is the writer's opinion that operation on the ganglion itself, though attended with all of its dangerous sequelæ, is the only means of permanently relieving the patient.

Another type of referred pain in the inferior maxilla that is often perplexing to the general practitioner is that arising from an old syphilitic lesion. This is a referred pain from syphilis of the heart or aorta and is probably referred through the sympathetic system. It is not an uncommon condition and must be taken into consideration in running down these obscure pains. Such conditions improve under antisyphilitic treatment. In the opinion of the writer, syphilis is a greater curse to mankind than tuberculosis. There is probably no disease that is as insidious in its progress with as far reaching effects as this disease. At the present time our one bright hope in the control of this disease is in the army and in the segregation of those afflicted. Syphilis is due to the infection with Spirochæta pallida and is only transmitted by contact. Consequently, it can only be controlled by segregation. A favorite site for the primary lesion or hard chancre is on the lip; it is also frequently found situated on the tonsils. The primary lesion is seldom found on the cheek or tongue. In its incipient stage it appears as a crack in the lip or an abrasion surrounded by a thickening of the tissues, which is later destroyed by ulceration. This can be differentiated from certain forms of stomatitis in that the chancre is painless and usually causes enlargement of the lymph nodes.

Secondary syphilitic manifestations of the mouth are usually of an erythematous or ulcerative type, commonly seen on the oral pharynx as an inflammatory area, attended by little or no pain. The mucous patch may be observed on the edge and tip of the tongue, and on the dorsum of the tongue, uvula and fauces. These mucous patches are frequently found on the inner surface of the lips. They appear as large or small, either round or irregular plaques of a grayish white color, covered by a sticky secretion. These can be differentiated from the plaques of leucoplakia buccalis in that those from the latter can be traced as arising from a local irritation. Secondary manifestations of syphilis in the mouth may be differentiated from certain forms of stomatitis, Vincent's agina or other acute mouth lesions, for the syphilitic lesions are not accompanied by pain.

Tertiary syphilitic manifestations are frequently seen in the mouth as gummatous ulcers. These may be mistaken for carcinomata if on the cheek or tongue. On the tongue they will usually appear over the whole upper surface, while carcinomata would be confined only on the edge and involve only one side

of the tongue. Carcinoma of the mouth is frequently the site of an old syphilitic lesion. Jonathan Hutchins, Jr., informs us that in thirty per cent of patients suffering from epithelioma of the tongue a history of former syphilis can be obtained; twenty per cent of the epitheliomata of the tongue have their site on syphilitic inflammation. Diagnosis of syphilis from mouth lesions is not a simple matter. The history of the patient is usually not reliable, for in the large majority of patients the knowledge of the presence of venereal disease is denied. The Wassermann test is the most reliable one at our disposal today. While all syphilitics will not give a positive reaction, yet it is very rare that a positive reaction can not be obtained in the presence of active syphilis.

What is the dentist's responsibility in regard to syphilis? When this disease is so prevalent today; when its sequelae are so far reaching; when it is so easily transmitted to others, is it sufficient for us when examining mouths of patients to simply look for carious teeth? There can be but one answer to this question. A few weeks ago a bright, fine looking young lady of fifteen presented herself for mouth examination. When she opened her mouth the writer was amazed to find that the whole palatal vault was missing, together with central, cuspid, bicuspid and one molar tooth on each side. The condition was at once recognized as syphilis. In so healthy appearing an individual the presence of congenital syphilis was dismissed. In obtaining the history, this syphilitic condition was found to have been induced by vaccination about four years previously. The only answer for the presence of this condition is that unclean instruments were used at the time of vaccination. This same unfortunate result might easily occur from unclean dental instruments after operating upon a syphilitic patient. Today you say we all sterilize our instruments. Yes, but how about the hands? Do we use rubber gloves in these suspected cases, and how about those patients whom we operate upon that do not excite our slightest suspicion? Yet if a blood test was made some of them would show a positive reaction.

The point the writer wishes to leave with you is that more careful survey of the mouth should be made on every patient and if a suspected lesion is discovered follow it up until it is identified. In the more suspicious cases refuse to do anything until a Wassermann test is made. It is now a matter of routine in many of the best hospitals of this country for a blood test to be made of every patient who enters. It is only by the strictest vigilance on the part of the practitioners in all branches of medicine that this disease may not get beyond our control. Will dentistry do its part?

### MALIGNANT DISEASES OF THE MOUTH

When we consider the invariable outcome of a malignant tumor of the mouth, when not treated, with its attendant horrors, not only to the victim, but also to his family; when we consider the improbability of successfully treating these cases in the advanced stages, then we can clearly conceive the advantages and importance of making an early diagnosis. The dentist usually sees these precancerous conditions long before the surgeon, because the average patient does not present himself to the physician until physical discomfort compels him to seek aid. At this time the disease has progressed to such a stage that makes the

condition inoperable, or at least the probability of successful treatment is greatly reduced. The dentist has the opportunity of observing these mouth conditions in the early stages, and Blair places the responsibility of early diagnosis upon our profession in his well delineated statement expressed in the beginning of this paper. The writer believes it to be the moral duty of every dentist, not only to examine the teeth of his patients, but to make a thorough examination of the mouth, lips, tongue, pharynx, and tonsils.

Any rough surfaces on the teeth which are producing a constant irritation should be removed. In cases of small chronic ulcers or sores in the mouth a complete history of the case should be obtained. If the history should lead to the assumption of former syphilitic affections then it should be looked upon with grave suspicion. One of these precancerous conditions with which the dentist will come in contact is leucoplakia. This is invariably caused by excessive use of tobacco. It is characterized by the formation of white patches on the mucous membrane of the tongue and may spread to the cheek. In tobacco chewers an outline of the quid of tobacco in a white patch is sometimes observed on the buccal mucous membrane of the gums and cheek in the vestibule of the mouth. Leucoplakia is an idiopathic disease, insidious in its progress, which begins with an opaque or white spot. The most common site is the dorsum of the tongue. These spots may ulcerate and coalesce into larger ones. In their incipiency these cause little or no inconvenience and if discovered at this stage, usually the removal of the cause will eradicate the disease. As their growth progresses they become painful and the tongue, lips, or cheeks, as the site may be, become indurated and slight hemorrhages may occur. At this stage we invariably have beginning carcinomatous degeneration.

The similarity between leucoplakia and secondary syphilis is often confusing. The syphilitic plaques usually appear on the border and back of the tongue and at the same time other patches may be observed on the gingiva, palate or tonsils. The syphilitic spots are soft, while those of leucoplakia are hard. In the diagnosis of precancerous conditions of the mouth we must ever keep in mind that any constantly continued irritation may predispose to malignancy. We must ever keep in mind that there is no part of the body that is so subjected to continual traumatism as are the mouth, lips, and tongue. We must not forget the fact that a large number of patients seeking dental services beyond the age of forty-five present mouths with teeth that are broken down with sharp edges or the surfaces abraded through the process of mastication, leaving knifelike edge surfaces which may abrade the soft tissues, giving rise to a chronic ulcer which may ultimately lead to malignant disease. Many of the precancerous conditions can only be correctly diagnosed by microscopical examination. It is clearly the duty of the dentist when a lesion is present in the mouth that can not be diagnosed as ordinary dental diseases to direct the patient's attention to it and, if possible, have a microscopical examination made. In obtaining a section always obtain normal as well as pathologic tissue in the section.

### DENTIGEROUS CYSTS

This condition is frequently mistaken for a tumor or an alveolar abscess. It is frequently seen in mouths of men and women under thirty years of age. It usually takes the form of a cystic growth connected with teeth or tooth follicles

when eruption is retarded. In the light of our present knowledge the explanation for the formation of these cysts is largely theoretical. Thomas has given what seems, to the writer, the most plausible theory. He states that when the development of the enamel of the tooth is completed its outer surface becomes perfectly detached from the investing soft tissue and a small quantity of transparent fluid not uncommonly collects in the interval so formed. This fluid is ordinarily discharged when the tooth is erupted, but when from some cause the eruption is prevented it increases in quantity and gradually distends the surrounding tissues, causing a resorption and disintegration of the adjacent osseous structures. The cyst may go on developing until a large portion of the jaw is involved.

It may be differentiated from an osteoma, in that with the cyst, fluctuation and crepitation can usually be elicited. It may be differentiated from an alveolar abscess from the fact that the cyst is very slow in its formation and is not accompanied by pain. Sometimes a history of several months in its formation will be obtained. The absence of any of the permanent teeth with the associated lesion suggests the possibility of a cyst. An amber colored fluid may be aspirated from the cyst by means of the ordinary hypodermic syringe in completing the diagnosis. The x-ray will show a definite cavity with a limiting membranous lining. The method of eradication consists of widely opening the cyst, removing the unerupted tooth or tooth follicles, removing entirely the cystic lining and treating the same as any other wound in the mouth of the same extent. It has been the writer's experience that packing the cavity with iodoform gauze and irrigating with five per cent salt solution every twenty-four hours will yield good results. The most serious sequela of a dentigerous cyst is the absorption of the bone against which the cyst exerts pressure. A large portion of the maxilla or mandible may be destroyed by pressure resorption resulting therefrom.

Epulis occurs most frequently in childhood and in young adults. In a series of 167 cases Scudder reports forty-nine of them were in men and 118 in women. Thus it would seem that women are more susceptible to these mouth tumors than men. The irritation from a carious tooth may start an epulis, or a tooth root may serve as an irritation which will encourage its development. Calcareous deposits on the teeth may also be looked upon as a possible etiologic factor. Bloodgood states that epulis stands between the really benign, slightly malignant, and the malignant connective tissue tumors. There are two varieties of epulis—the fibrous epulis and the giant cell epulis, the giant cell epulis being the more common. The fibrous epulis is ordinarily of small size, projecting between two teeth and spreading somewhat over the alveolar border. This type may become calcified extensively or in limited areas throughout its substance. The fibrous epulis is smooth and quite firm on the surface, not very vascular and does not bleed very easily, while the giant cell epulis is soft and irregular and contains many vessels and bleeds easily when disturbed.

This growth is slow at first, but becomes rapid as it progresses and many times will cause the teeth to spread apart with consequent loosening. As these tumors enlarge they may remain attached to a small stalk. At first these tumors are benign, but later may become malignant. The importance of early treatment can not be overestimated. They should be removed as soon as identified and sub-

jected to a careful microscopic examination. The portion of the periosteum or alveolar process to which they are attached should also be removed. This may necessitate the removal of one or several teeth in order to remove the tumor in its entirety, and unless it is completely eradicated the effort to obtain a cure will be fruitless.

There is a greater tendency to do an insufficient amount of cutting than there is to perform an operation that is too radical. After the complete removal of the tumor and its source the actual cautery should be used to sere over the wound. Another very important and not infrequent pathologic condition of the mouth which is of vital interest to the dentist is Vincent's angina. The lesions are associated with a mixed invasion of fusiform bacilli and Spirochetes Vincenti. The fusiform bacillus was first described by Miller in 1883, who found that the infection occurred in clean as well as in unclean mouths. During the decade following 1896 Vincent, a physician in Paris, wrote extensively on both the organism and the clinical findings. He gave the disease the name of Vincent's angina. It is defined as an infectious disease of the mucous membrane of the mouth, throat, and bronchi. This disease, or one simulating it, is prevalent among the troops of the armies of Europe and is referred to as "trench mouth" or "trench gums." The disease probably has no connection with trench life excepting the conditions made possible by the collecting together of large numbers of young men. The one condition which favors the development of the disease is oral sepsis. Vincent's angina is a very infectious disease and when it makes its appearance in the army it soon becomes an epidemic. The disease is characterized by a deep tissue necrosis, covered by a whitish gray membrane. This membrane is easily removed and when rubbed off leaves a granular, raw, bleeding base. This leads to craterlike ulcers with irregular edges.

Barker and Miller[3] classify the symptoms as follows: Objective signs,—insignificant constitutional disturbances, as a rule the patient is not very ill; absence of fever, the temperature rarely rising over from 100 to 101 degrees; heavy and offensive breath; enlargement of the cervical and submaxillary glands, moderate as a rule; they are tender and never suppurate; the lesion itself; and swollen, spongy, and bleeding gums, suggestive of scurvy.

Subjective symptoms:—The patient complains of extremely bad taste in the mouth; tenderness of the gums, so that the use of a tooth brush is impossible and mastication is so painful as to preclude eating; pain in swallowing; looseness of the teeth, with salivation, which is common, resembling mercurial ptyalism; anorexia, or loss of appetite; painful joints; lassitude—"lack of go;" and the most serious constitutional symptom, and one always present when the teeth and gums are affected, is severe depression.

The prognosis is usually favorable. Most cases run a benign course. If seen early the case can be controlled easily. Internal medication has little or no value. The care of the mouth is the first essential step in prosecuting the treatment. A solution of one-half of one per cent potassium permanganate used as a mouth wash every three hours will yield good results. The application of seven per cent tincture of iodine to the pockets around the teeth and touching the ulcers with silver nitrate (concentrated solution) is recommended. Emrys-Roberts[4] recommends a lotion of hydrogen peroxide, five fluid ounces; wine of

ipecac, three drams; glycerine, five drams, and water sufficient to make eight ounces. Local applications of arsphenamine in concentrated solutions or dusted over the surfaces are regarded as one of the best therapeutic measures obtainable. The mouth and teeth should be made as clean as conditions will permit before resorting to local treatment.

### DISEASE OF THE ANTRUM OF HIGHMORE

What is the dentist's responsibility relative to the treatment of these cases? The writer believes that greater good and more satisfactory results can be obtained by cooperation of the rhinologist and the dentist in these cases. It is a matter of making a correct diagnosis. When the disease is of purely dental origin then the responsibility should fall upon the dentist to handle the case. If the accessory sinuses are the etiologic factors in producing the disturbance then the responsibility must rest upon the rhinologist. There are just three principles that we must keep in mind in the treatment of empyema of the antrum:

First remove the source of irritation, then drainage must be established, and finally ventilation must be maintained. In other words, treat it as any other abscess in the body is treated, with the addition of maintaining ventilation.

The writer wishes again to emphasize the importance of making a correct diagnosis. This is more important than the character of the operation. It is not of so much importance as to whether drainage is established through the nasal or oral cavities as it is that the source of irritation be removed. Too often dentists open into the antrum in the attempt to effect a cure when the source of irritation is in the frontal or sphenoidal sinuses or ethmoidal cells. In these cases only two of the three principles are carried out, viz., drainage has been established and perhaps ventilation maintained, but the antrum still discharges because the source of the trouble is still present. It is such cases that have led to the criticism of the Caldwell-Luc operation, or opening the antrum through the canine fossa. A criticism that is frequently made is that the opening will not close. Of course, it will not close if pus is continually discharging through it. If the source of irritation is removed, it has been the writer's experience, and in this he is sustained by many others, that it is difficult to keep the antrum open long enough to treat it. This whole proposition can be reversed if the source of irritation is of dental origin, then opening through the nasal fossa will not avail a cure. It merely establishes a drainage. Again, the method of operating is of secondary importance.

In cases of empyema of the antrum, when the source of irritation is of dental origin, the writer prefers opening into the antrum through the canine fossa, making the opening large enough to explore the antrum with the forefinger, thus septi may be discovered and cut away if necessary. The antrum is then irrigated with a five per cent salt solution and packed with iodoform gauze for twenty-four hours. The gauze is then removed and not replaced, but a gutta percha button is fitted to the opening to keep out food debris, etc. The antrum is then irrigated every twenty-four hours for three or four days; then the irrigations are made less frequent. The gutta percha button is cut down each time of treatment until it is reduced to five mm. in diameter, when it is left out entirely and complete repair takes place.

We shall now consider briefly a phase of one of the most common pathologic conditions found in the mouth, viz., those morbid conditions involving the pericemental membrane. The writings on the subject of mouth infection have been voluminous during the past five years, and in this discussion we shall confine our thoughts to the eradication of those infections found at the ends of the roots of the teeth.

Dental and medical science[5] have made it clear that pathologic conditions of the pericemental membrane and diseased ends of the roots of the teeth are a contributing factor to, and frequently the primary cause of, general systemic disturbances. The physician and the laity are looking to the dentist to eradicate these conditions. This can be done by the extraction of the teeth followed by curettage and by surgical interference at the focus of infection, mechanically removing the morbid condition, leaving the healthy tissues to go on functionating.

It is a well known fact that with our present methods of root canal therapy, few of these morbid conditions can be so corrected that we can conscientiously assume that the area is free from infection, and will remain so. By what steps then are we to decide whether extraction of the tooth is indicated or whether the greatest service to the patient can be renderd by root resection? No hard and fast lines can be drawn as to just when root resection is indicated and when extraction of the tooth should be the operation of choice. Here again we come to the great question mentioned in the first part of this paper, viz., diagnosis. A correct diagnosis of each case is not a simple matter. The first question to determine is: Are general conditions favorable to normal repair of bone? To determine the answer to this question, there are several vital factors that must be taken into consideration. First, the present state of health of the patient; second, the past illness, and the possible recuperative or reserve force of the patient. The lowering of the vitality through chronic alcoholism or such diseases as tuberculosis, syphilis and diabetes which lead to a state of constitutional dyscrasia will have a profound influence in preventing repair, and redevelopment of normal tissue.

Age is another factor which should be considered. In the aged, the process of repair is slow and the prognosis for home regeneration is not so good as that in the young or in middle life. In the aged the operation of root resection is not undertaken without considerable hazard. The condition of the circulation of the blood is still another factor that plays a very important role in making up a judicial diagnosis. It is an established surgical fact that without a certain definite blood supply to a part, repair of tissue will not take place. Notwithstanding the fact that the teeth and surrounding structures have a very rich blood supply, in certain types of individuals, and under certain pathologic disturbances, there is not sufficient blood supply to the apical area to insure repair of the parts after the operation of root resection. The clever diagnostician will discover this condition before making his final decision as to the character of his operation.

### THE X-RAY IN DETERMINING THE OPERATION INDICATED

The proper evaluation of x-ray findings is very important to correct diagnosis. If the case is one of an alveolar abscess of long standing, or a case of imperfectly filled root canal with granuloma showing in the apical area where all

of the evidence points to disease and death of the pericemental membrane in the apical areas, it is the opinion of the writer that surgical procedure rather than dental therapy is indicated. The character of the surgical procedure may be root resection in favorable cases and extraction of the tooth in the unfavorable ones. It is a lamentable fact that many men are resorting to root resection as a short cut method for curing an alveolar abscess over a beautiful crown or bridge attachment without first removing the same and sterilizing and filling the root canals. If the canals and dental tubules are not previously sterilized and the canals thoroughly filled, a reinfection will occur from the tubuli exposed when the resection is made.

It is not permissible to leave a crown on an imperfect foundation because it is a masterpiece of art. If it is not worth while to remove it and sterilize the canal and tubuli then it should be extracted. Too often, root resection is resorted to for the purpose of saving a nice piece of bridgework, and the patient's health is jeopardized. We are not doing good surgery when, as a matter of routine, we do not insist that the canals be sterilized and filled just previous to the operation.

The question of sterilizing and completely filling canals in multirooted teeth for the eradication of an infection, is a very doubtful procedure and in the writer's opinion the patient's welfare will be better taken care of by extraction followed by curettage of the bone. In no cases should this operation be resorted to when the bone and pericemental membrane are diseased beyond the apical third of the root.

The technic for the operation of root resection will vary with the individual operator. The welfare of the patient should be the first consideration; a hasty diagnosis will often lead to failure, and the patient will consequently suffer from the operator's misconception of conditions.

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## SURGICAL LESIONS OF THE ORAL CAVITY*

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IN presenting this article, I have not gone into what constitutes the oral cavity or the associated parts or the pathologic, microscopic or bacteriologic condition in lesion of the oral cavity, but have endeavored to condense and make it as brief as possible.

A very serious condition confronts the oral surgeon today in this World's War, in the numberless wounds to the oral cavity from the explosion of the hand

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grenade, a blow from the gun stock, sabre stroke, thrust of a bayonet, bursting shrapnel, the cannon ball or any of the terrible implements of warfare.

The first consideration will be wounds of the oral cavity. Most of these wounds may involve all of the soft and hard parts of the oral cavity, with invasion of all kinds of infection of bacteria and bacillus.

Wounds are classified as open and closed wounds: open as from knives, sharp instruments, stroke of sabre, thrust of bayonet, bursting of shrapnel, bullets and cannon ball; closed as from contusion, a blow of the butt end of a gun stock, which sometimes results in fractures. From a clinical standpoint, open wounds are classified first, as incised or clean cut wounds made with sharp instruments; second, punctures with pointed instruments, a thrust from a bayonet, torn or lacerated, either by bullets or some projectile, the condition of the wounds depending upon the velocity and kind of projectile.

Closed wounds are classified as such when the soft parts and periosteum are involved as from a blow causing contusion, or from burns, destroying tissue either by heat, cold, light, electricity, gases or caustics. Wounds may be considered under one general head as aseptic—free from infection, septic—infected by some microorganism or bacteria and bacilli; the bacteria such as streptococci, staphylococci, pneumococci and gonococci; bacilli as anthrax, glanders, spirocheta or syphilis, actinomycosis or lump jaw, from the ray fungus. Poisons as ptomaine from putrid meats; toxines as tetanus and diphtheria. The bacteria may be pathogenic and nonpathogenic and accompanied with hyperemia, edema, swelling, pyrexia and prevalence of leucocytes which might produce leucocytosis. Wounds may be divided again into superficial, deep, simple and complex, as from foreign bodies, with serious infection, hemorrhage, injuries to the blood vessels, nerves, bones and other parts. Most injuries of the superior maxillæ and mandible are apt to involve the soft structure causing cellulitis, lymphangitis, caries followed by necrosis and sometimes infection of tetanus and anaerobic bacillus.

During the Spanish-American War in the South, they had several cases of caries and necrosis from the administration of calomel. Treatment for tetanus the tetanus antitoxin given hypodermically; actinomycosis is surgical and the x-ray; syphilis is the mercurial, iodii potassium and salvarsan, and in case of perforation of the soft and hard palate when the syphilis is cured, do a mucoperiosteum operation filling in the lost parts as in a cleft palate operation. If any of these conditions exist, which they always do, the patient will have a temperature and in most cases shock. In all injuries if hemorrhage is present, one must first of all control it. Then clean the wound of all foreign substances with a normal saline solution, "Dakin's solution," chlorazene solution or permanganate potassium solution; second, by compression of the carotid artery or by picking up the vessels with a hemostatic forceps, tying a ligature around the artery, or if the artery is separated, by suturing, by Criles' method. In regard to closing the wound one must first have coaptation of wounded surfaces which will promote healing by first intention if all infection has been cleaned up; if an infection, one must put in a septic condition using drainage, and the best is Sigret or the gauze tape either one inch or one-half inch, with a solution of soluble iodine or iodoform gauze tape; then place over that several thicknesses of dry gauze using ad-

hesive tape to secure it and retain it in position, changing the dressing every day or so, irrigating with the solution above mentioned. Administer internally, soluble iodine 3 gtt.—doses 3 times a day before meals, increasing it 1 gtt. a dose a day until at least 20 or 30 gtt. is reached; of potassium iodii or specific medicine Echinacea "Loyd's" Z doses in water 2 oz. every 2 hours. Give sodium sulphate for the bowels, or in fact, always see to the elimination of the kidneys and bowels. One thing I never use is peroxide of hydrogen, as it not only irritates the wound and prevents healing, but carries infection to other parts.

In case of shock administer, first of all, ¼ gr. of morphine or H. M. C. hypodermically, afterwards stimulants and heat to the body, stimulants such as strychnine 1-60 to 1-30 hypodermically; put the patient to rest in a warm bed in a warm room, hot water bottles to the body. In case of nervousness such sedatives as any of the bromides or specific med. gelsemium x to xx gtt. in water 4 oz., then give 1 dr. every two hours or oftener if needed. If very much involvement of the tissue with pus, use the lance quite freely and above all do not forget to establish drainage afterwards. In case of postoperative hemorrhage use coagulose, surgical pituitrin, horse serum or adrenalinchloride 1-1000 hypodermically. In case of caries or necrosis, curet, establish drainage, swab with aromatic sulphuric acid, irrigate with Dakin's solution or permanganate of potassium, pack with soluble iodine or iodoform gauze tape until normal condition is established. In case of infection of actinomycosis, remove all of the decayed teeth or roots, clean the mouth, curet, irrigate with permanganate of potassium solution, establish drainage, pack with soluble iodine, use x-ray treatment, administer potassium iodii. In case of syphilitic lesions, remove the necrosed bone, use soluble iodine, put patient on systemic treatment, either mercury, potassium iodii, or salvarsan.

In regard to fractures of the oral cavity during the World War, one will find from a simple to a complicated fracture, but I would think there would be more of comminuted and compound as a result of the blow of a gun stock, gunshot or bursting shrapnel causing contusion, splintering of the bone with serious laceration of the tissue, tearing the nerves in two, and severing them, and displacement of the bony structure accompanied by shock, hemorrhage and more or less infection followed by inflammation; swelling of the tissue and likely pus and caries and necrosis with lack of function to the parts. In repairing these injuries, first attend to shock if present; second, clean the injury and remove all foreign substance; third, stop hemorrhage; fourth, bring the fractured parts together by thorough coaptation either by splints or wiring the teeth together, having proper occlusion of the teeth, or surgically wiring through the fracture, using silver wire about 26 gauge, or by bone core, bringing the soft parts together by suturing, using drainage, covering the parts with aseptic gauze, using different bandages such as four tail, Garrison or Barton, keeping the parts mobilized from four to six weeks, as it takes about that long to form a cast or union of the bone. See that the mouth is kept as nearly aseptic as possible. In most cases to reduce a fracture, a general anesthetic should be used, but if conductive can be used, do so; but as a general anesthetic nitrous oxide and oxygen with ether sequence, by nasal or intratracheal, or if you are on the field, ethyl chloride followed by ether as it is. Sometimes from necrosis and lack of circula-

tion, we have cases of ununited fractures which are apt to occur in compound comminuted fractures; open up and use transplantation of bone or bone core, which should be taken from tibia or the tibial crest, filling in and preventing resection of the jaw; the regeneration of the cells will take from two to three months.

The crest of the tibia is the best to use in the transplantation, using motor saw and chisel, handling the core as little as possible with the hands, suturing the core with kangaroo tendon to retain it in place, and in a short time or by the time of union, it will be absorbed. Then close the wound without drainage, and a well-fitted plaster can be applied if there is no infection. The success in treatment of all lesions of the oral cavity depends on the asepsis, or one will have failures.

The sutures are the aseptic silk, linen, ligatures, formalized pyoktanin catgut, size from No. 1 to No. 00, kangaroo tendon, 20 day catgut No. 1 to No. 3, and horse hair for stitching the skin as it leaves very little scarring.

In case anesthesia can not be produced by inhalation, or conductive, then you will use ether per rectum, which must always be used only in a hospital. Put the patient at rest, administer tonic. In regard to feeding, liquid diet either by nasal tubes, back of the third molar or per rectum. In all lesions of the oral cavity you will have more or less infection and the oral cavity should be as surgically clean as possible, as well as all of the instruments that are used.

### ANKYLOSIS OF THE TEMPOROMAXILLARY ARTICULATION

This condition may exist from a fracture of the lower jaw or an injury to it and from being immobilized for so long a time, or from infection from typhoid fever where an excess of calomel being administered causes cancrum oris. Now this ankylosis may be temporary, permanent, incomplete, false, or complete bony, fibrous and osseous. It may be unilateral and bilateral. The treatment is to apply a wooden screw, a wedge by dilation with a gag. This dilation should be done every day, using the dilator on the occlusal surface of the teeth. I had a dilator made which will separate the jaws. After separating, put between the teeth a wedge of wood or compressed cotton which will swell from the moisture. Have the patient use a rubber cork between the teeth each day or operate upon the joint, using the Murphy operation.

Unerupted or impacted teeth in adult life and especially the lower third molars and the upper third molars, cause one of our serious lesions of the oral cavity. Some of the predisposing causes: first, defective embryonic development, malnutrition, syphilis, neurotic tendency, eruptive fevers, anemia, artificial feeding, idiocism. The exciting causes: first, arrested maxillary development, undue thickening and resistance of the overlying tissue, undue stimulation of the inferior dental nerve by pathologic conditions producing nutritional changes that intensify the bone in the region of the impacted tooth, malposition due to contracted dental arches, severe traumatism to the jaws causing disposition of lime salts in the cancellous tissue, too early loss or extraction of deciduous teeth, inflammation of the jaw bone set up by decayed teeth, local increase in the density of the bone brought about by inflammation of the peridental membrane extending into the alveolar process. The cancellous tissue, instead of remaining

spongy and elastic, becomes hard and solid. This condition following caries of the first permanent molar soon after its eruption is frequent cause of impaction of the lower third molar.

### SYMPTOMS

Impacted teeth may be present without giving any local or systemic symptoms, such as the appearance of the cuspids and third molars in adult cases, or unerupted supernumerary teeth, causes reflex pain, facial spasms, chorea, epilepsy, melancholy, mania, paralysis, sensory alterations, neuralgic or trophic changes, paroxysmal pains, insomnia, chills, thrills and flushes and muscular twitching, sweating, melancholy, fever or irregular pulse, pain across the frontal, temporal and parietal bones, pains in one ear or both and pains in the eyes, temporomaxillary articulation, ankylosis of the temporomaxillary articulation both permanent and temporary, pain in the shoulders and knees. Now some of your local symptoms such as swelling and inflammation of the gums around the teeth, and you may have separation, cellulitis, muscular contractions, tonsillitis, infection of the eye or iritis, infection of the lymphatic glands, caries and necrosis of the jaws, tumors benign and malignant (cancer has been caused from them), infection of the inferior dental nerve. Impaction may set up functional, nervous, and mental disorders, paralysis of the arms, spasms of the sternomastoid muscle, commonly called wryneck, deafness, neurasthenia and mania, infection of the tissue causing toxic neuritis, arthritis, endocarditis, nephritis, sepsis, gastritis, anemia, toxemia and septicemia.

### DIAGNOSIS

Pain, swelling, redness, heat and impaired function of the jaw. The x-ray renders the impaction positive, certain and exact.

In removing, thorough cleansing of the mouth and tissue, paint the field with tincture of iodine using conductive anesthesia when possible. Instruments consist of mouth gag, cheek retractors, tongue depressor, small retractors, hemostatic small, straight and curved, tenaculums, one large hemostatic forceps, several curved needles, ligatures, needle holder (Brophy's preferred), mouth mirror, cotton pliers, one or two curets, bone cutting burrs, curved bistoury, several periosteal elevators, extracting forceps, excising bone chisels and mallet, mouth swabs, curved gum scissors. Some of the dangers of removing impacted teeth—inspiration of blood, pneumonia, hemorrhage, fractures of the jaw, dislocation of the jaw, general infection, failure to secure the tooth through the patient swallowing it. This can be avoided by packing with long sponges having your long hemostat at hand. These teeth should be removed surgically and the mouth kept in a septic condition, patient at rest, liquid diet, elimination of the kidneys and the bowels, administration of tonics, and in nervous conditions, sedatives. Avoid all hot packs to the jaws. These teeth should never be removed by the ordinary dentist or general practitioner, but by an oral surgeon or exodontist.

I will not go into the condition of the maxillary sinuses or infections of the oral cavity as leucoplakia, Vincent's agina, as no doubt at this meeting those subjects have been duly discussed.

# *ABSTRACT OF CURRENT LITERATURE*

**Covering Such Subjects as**

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

## *ORTHODONTIA*

**Value of Orthodontic Treatment.** Oren A. Oliver. The Dental Summary, xxxix, No. 1, 1919, p. 66.

Summing up a few of the benefits of orthodontic treatment, which are as numerous as the varied causes of malocclusion, the author enumerates normal occlusion, normal breathing, proper mastication, normal facial outlines, improved digestion and prevention of pyorrhea and caries. These far-reaching results make it necessary to impress upon our patients that the greatest value of orthodontic treatment lies not in the esthetic side, but is derived from the benefits which occur when the teeth are placed in normal occlusion, thereby eliminating many dental and systemic ills augmented or caused by malocclusion. With special reference to the most suitable age for the correction of malocclusion, the author states that the younger the patient, the better and easier the correction. By early correction of these cases marked facial deformities can be overcome. The length of time required for the treatment depends upon the class and type of the individual case. The average time for the completion of a case is from one to three years. Provided that all orthodontic treatment has been completed by the time the permanent teeth which replace the deciduous teeth are in full eruption orthodontia becomes an aiding process and the final result is the best that can be obtained.

**Alveolitis Dentalis. Interstitial Gingivitis, So-called Pyorrhea Alveolaris, Localized Catarrhal Stomatitis. Suggestions as to Its Cause and Its Treatment.** J. J. McNulty. The Boston Medical and Surgical Journal, clxxx 180, No. 8, 1919, p. 177.

The author points out that alveolitis dentalis or interstitial gingivitis is an error of metabolism manifesting itself essentially in and about the dental alveolus. The disease develops on a nutritional basis, and its treatment should accordingly be systemic, combined with surgical procedures as indicated. Insufficiency of the internal secretions and enzymes being ultimately responsible

for the condition, the scientific logical and effective treatment is the administration of properly associated internal secretions and enzymes. Diet is an essential factor in the treatment of alveolitis dentalis, and whole cereal food which is rich in vitamines and saline nutrients should be supplied to these patients. It is desirable that all proximate salts essential to health should be furnished through proper food. The digestion and conversion of the food into available nutriment is advantageously assisted by the administration of properly combined digestive ferments with meals. Orthodontic care is an important and essential part of the treatment of alveolitis dentalis, a condition which calls for the efficient cooperation of physician and dentist.

## *ORAL SURGERY*

**Closure of the Palatine Gap after Resection of the Upper Jaw. H. Morestin. Bulletin et Memoires de la Societe de Chirurgie de Paris, xliv, No. 20, 1918, p. 1002.**

Following the resection of the upper jaw for malignant tumor, the communication between the mouth and the nasal fossæ constitutes a most distressing infirmity which no apparatus can satisfactorily relieve. Endeavors are therefore in order to close this gap either immediately after the resection of the maxilla, or later on. Immediate restoration is evidently the most satisfactory solution, whenever it is practicable, as is often the case. When the palatine mucosa has not been invaded by the new growth, there is no reason for sacrificing it together with the bony framework. It is preferable to detach the mucosa, after having outlined a curved incision, at the outer portion of the palatine vault, as in the uveoplasty incision, and to keep this membrane in reserve, to suture it to the buccal mucosa, after avulsion or partial resection of the maxilla. Even in case this mucosa has to be removed up to one-half of the vault, there is nothing to prevent the buccal mucosa being detached, liberated, drawn inwards and sutured to the palatine gap. This procedure, of course, presupposes that it has been possible to preserve the cheek entirely or nearly so; that the hemostasis is satisfactory, and that the wound-cavity does not require direct supervision. However, very numerous cases remain in which this immediate reunion should be tried, and the author contributes three personal observations.

As a rule, however, palatine gaps resulting from resection of the upper jaw are closed secondarily. In order to close the large communicating orifice between the mouth and the nasal fossæ, recourse must be had to the mucosa of the cheek. The suppleness, the extensibility and the mobility of this membrane, its excellent blood supply, and its resistance render it very valuable for plastic purposes. It is a simple procedure to detach the buccal mucosa and to slip it inside, assisted by incisions applied anteriorly in the gingivo-labial groove and backwards, towards the posterior portion of the cheek. The accidental division of Steno's duct has no serious consequences, the divided canal apparently undergoing obliteration after a variable length of time. The difficulties of the operation are considerably diminished by resorting to local anesthesia.

This intervention may at once prove entirely successful, whereas in other less satisfactory cases the success is only partial and the gap is simply reduced

in size. Repeated attempts may be made, conducted in a similar way, with improved prospects of success in proportion to the reduction in size of the orifice by the preceding operations. In four patients who had previously undergone resection of the upper jaw, the author was enabled in this way to obtain the obliteration of a large, persistent communication between the mouth and the nasal fossæ. He emphasizes the fact that the buccal mucosa offers incredible resources in the reconstructive surgery of mutilated palates.

**Acute Ulcerative Gingivitis. C. G. Colyer. British Medical Journal, October 12, 1918, p. 396.**

Acute ulcerative gingivitis is an acute inflammatory condition of the margins of the gums, which spreads rapidly, and leads to sloughing of the interdental papilla; sloughing of the gums around the necks of the teeth; ulceration of the adjacent mucous membranes (in the more severe cases); rarefying osteitis and destruction of the bone around the teeth, in chronic cases. Severe cases of acute ulcerative gingivitis represented 0.65 per cent of all men reporting sick on account of their teeth, in the experience of the author as advisory dental surgeon in the British army.

Only a small proportion of men suffering from the condition report sick until the pain becomes severe, and there is considerable ulceration. Significant points affecting the army in connection with this disease are its contagious nature, the disability produced, and the subsequent loss of teeth unless treated early. The average duration of treatment in first attacks is ten days, provided treatment is vigorous. Less reliance than in the past is now being placed on the action of antispirochetal drugs, and more on thorough surgical cleansing of the infected areas. The treatment is laborious, and personal daily treatment by a dental officer is required for each case. Relapses are common, and probably chiefly due to inefficient treatment or too early discharge. The usual duration of the disease from the commencement of treatment is ten to fourteen days, patients usually becoming free from the specific organisms on the eighth or ninth day. Patients are not cured until the specific organisms (a mixture of Bacillus fusiformis and Spirilla) can no longer be found by bacteriologic examination.

**What Constitutes a Dead Tooth? L. Novitzky. Medical Review of Reviews, xxv, No. 2, 1919, p. 94.**

The fact that every pulpless tooth is a dead tooth is emphasized by the author, who adds that every dead tooth is subject to the laws of putrefaction and infection. Its one source of nourishment has been cut off, and without nourishment there can be no growth and no vitality. Every dead tooth is a source of danger, and from the viewpoint of preventive medicine the removal of all pulpless teeth seems to be advisable. Devitalization of teeth by dentists, through removal of the tooth pulp, is cautioned against as a dangerous procedure, which should be replaced by extraction in all cases where the survival of the pulp can not be secured. After putrefactive changes have become established in the dead tooth and in the underlying alveolar process, extraction will not be sufficient, and removal of the offending tooth and infected alveolar process is then

indicated by the operation advocated and used by the author since 1915. During the last five years extended radiographic study has convinced him that apical destruction is greater in pulpless teeth which have been treated and plugged than in pulpless teeth which have been neglected. No method has been devised which serves to preserve a pulpless tooth sterile or embalmed. When a pulpless tooth is removed by the dissection operation, a culture of pathogenic microorganisms can always be obtained from its root ends. A dead tooth and any infected area about its root ends should be removed from the jaw fully and cleanly. Its safe removal without danger of leaving infected alveolar process in the jaw, is possible only by the author's dissection operation described elsewhere.

**Abnormal Conditions of Enamel in Cases of Malnutrition.** L. Lawson Dick. Lancet, London, October 5, 1918, p. 456.

The author emphasizes that although the calcification of the enamel proceeds normally during intrauterine life in almost all cases, immediately after birth factors step in which interfere with the proper growth of the enamel, producing defects which are permanent and which are likely to weaken the defenses of the teeth and to lead to decay. The agents which determine the tendency to decay are those which affect the soft enamel organ in the earliest history of the tooth and not those which affect the enamel after the tooth has been erupted.

In his capacity as Assistant School Medical Officer, London County Council, the author was enabled to carry out comparative investigations of the teeth of 403 school children of eleven years and over, including 281 where nutrition was decidedly poor and 122 children of good nutrition. Out of the 281 poor children, 114, or 40 per cent, had defective enamel, as compared with 13 per cent among the better-class children. The commonest defect found in malnutrition is a chalky appearance of the enamel, varying from white patches or transverse bands on the surface of the enamel to a general opacity affecting its whole surface. Opaque patches affect chiefly the central incisors, the lateral incisors, and the canines in order of frequency, indicating errors of nutrition during the first two years of life, but are also fairly commonly found in the premolars and second molars, which must be due to conditions operating on the child between the second and sixth years. Another common and well-marked defect found in cases of malnutrition is represented by the brown lines of Retzius or brown staining of the enamel.

**Early Suturing of Wounds of the Face.** V. H. Kazanjian. The Journal of the American Medical Association, lxxii, No. 9, 1919, p. 626.

The fact is emphasized by the author, on the basis of his experience as surgeon of the Harvard Surgical Unit, that in order to obtain a minimum amount of facial disfigurement the method of early as well as late suturing must be followed in the treatment of war wounds of the face. The determining factors are the location and severity of the wounds, the amount of involvement of adjacent structures, and the degree of sepsis that has developed. Sepsis fractures and the loss of natural support are obstacles to successful primary suturing of wounds

of the face. On the other hand, superficial wounds with no loss of soft tissue and wounds with slight or no connection with the oral or nasal cavities in most instances may be closed successfully. General anesthesia is cautioned against in all gunshot wounds of the face and jaw, on account of the marked tendency of sepsis in the oral cavity to induce respiratory complications. The types of wounds suitable for early secondary suturing, which has a much wider scope than primary closure, are the following: (*a*) Wounds in which there is slight or no bony injury. (*b*) Wounds involving extensive bony injury *without loss* of soft tissue. (*c*) The radiating parts of certain wounds, as a definite step in preparation for a later plastic operation. The usual time of suturing is between the fifth and twelfth day after injury, depending on the nature of the wound, the condition of the patient, and the severity and duration of the infection. Fixation of the bony fragments and a control of sepsis always precede the operation. In case of wounds involving bony injury, all irritating and useless fragments of bone or teeth are removed, splints for the reduction of the fracture applied, and appliances in certain instances also used to support the soft tissues. Suturing is postponed until the local inflammation has subsided. In wounds involving extensive destruction of the soft tissues, it is necessary to wait for the disappearance of the suppuration and a healthy look of the wound before attempting the reconstruction of a part of the face. All flaps and appliances must be carefully planned. The prospects of the final operation are improved by careful preliminary treatment, by the control of scar formation, and by the maintenance of the oral cavity in a condition suitable for appliances or later oral restorations.

**Bucco-pharyngeal Manifestations of Typhoid Fever.** A. Campani and F. Bergolli. La Riforma Medica, 1918, No. 14, p. 264.

Changes in the buccal cavity and the pharynx are among the initial symptoms in an entire series of infectious diseases. The authors endeavored to establish these changes in 108 cases of typhoid and paratyphoid fever, respectively. Pharyngeal changes were found in fifty of these cases (46 per cent), fourteen times in the form of simple erythema, six times as a condition characterized by mucus and crust formation, eighteen times in the form of vesicle formation, three times as roseola, finally thirteen times as a typical ulcerative angina. A peculiar dryness and opacity of the teeth is especially emphasized by the authors as a sign of unfavorable augury. There is also a well-marked desquamation of the epithelium of the gums, occurring in benign as well as severe cases. This desquamation must not be confused with the gingival border described by French writers, which constitutes an early symptom of pulmonary tuberculosis. With special reference to the condition of the teeth, this is not absolutely dependent upon the dryness of the remainder of the buccal cavity, for it often persists after the tongue has become moist. According to the author's observations, this sign of the teeth is suggestive of a possible recurrence and represents a danger signal for the physician. A return of the fever was repeatedly noted in patients who were otherwise apparently convalescent but whose teeth nevertheless remained opaque and dry.

**The Anatomy, Physiology, and Pathology of the Interdental Space. W. Roos. Inaugural Dissertation, Zurich, Switzerland, 1918.**

The interdental space, viewed in the bucco-lingual direction, has the shape of a triangle with its base situated at the interalveolar septum. It is bounded in the direction of the mastication plane to the alveolar process by the alveolar septum; in the direction of the alveolar process to the mastication plane, by the point of contact of the approximated surfaces of the two adjacent teeth. In the macerated jaw, the interdental space, seen in the bucco-lingual direction, is open; in the unmacerated jaw, the entire space is filled by the interdental papilla. The latter serves to prevent the accumulation of food remnants and bacteria in the interdental space and thereby to protect the approximating surfaces of the teeth against caries. It furthermore prevents mechanical and chemical injuries of the circular dental ligaments and thereby also of the periodontium. Scrupulous care of the mouth is the foundation for the maintenance of healthy gums. The condition of the interdental papilla is of importance for the preservation of the teeth. All factors which are followed by permanent drainage of the papilla have serious results, be it because the approximating surfaces of the teeth become predisposed to caries, or because the penetration of food remnants and bacteria leads to the formation of pockets in the gums, with subsequent development of pyorrhea alveolaris, usually followed by loosening and loss of teeth; or finally, because the infection gives rise to a more or less severe pericementitis, originating from the infected pockets in the gums.

Pathologicoanatomic findings in animals have shown that as a result of chronic irritation from protuberant fillings an inflammatory process is set up which is followed by connective-tissue degeneration of the interdental tissue, osteoclast formation in the periosteum, and atrophy of the bony interalveolar septum.

Acute mechanical causes acting upon the interdental tissues are: Injuries with wooden toothpicks, separators, hickory wedges, exaggerated compression of the papilla with the elastic separator, detachment of the gums and of the bony interdental septum in extractions, injuries through orthodontic appliances, such as angle-rings, ligatures, or rubber rings. As the results of these lesions, the following are met with: secondary caries, gingivitis, pericementitis, abscess formation, necrosis of the papilla, atrophy of the papilla and the bony septum, infection and pyorrhea alveolaris, loss of the tooth. Chronic mechanical causes are active in the presence of protuberant fillings, loose crown rings or badly fitting rings of orthodontic apparatus, dental fillings with imperfect points of contact, deposits of tartar. The results are gingivitis, edematous swelling and congestive cyanosis of the gums, chronic proliferation, partial neurosis of the gums, atrophy of the bony septa, formation of pockets in the gums and development of pyorrhea alveolaris, secondary caries, pericementitis and loss of the tooth.

Concerning clinical features it is well known that all severe affections of the oral mucosa, and especially of the gums, may under favorable conditions lead to more or less extensive neurosis. Arsenic or cobalt in the interdental space invariably leads to neurosis of the papilla and in part also of the bony septum. Pathologic conditions of an infectious character are found wherever a

lesion or detachment of the gingival tissue provides an entrance for food remnants and bacteria. The avoidance of all these injurious factors, the removal of chronic irritants, suitable care of the interdental space, and conscientious work on the part of the dentist will result in the preservation of a healthy masticatory apparatus for the patient and in his protection against much pain and suffering.

The author's investigations of the interdental space and the various factors which affect it, are based upon a material of 380 patients. In addition, attempts were made by experiments on animals to produce the analogous destructive processes seen in man, and to study these changes through histologic examination of the corresponding tissues of the interdental space.

**Surgical Treatment of the Pseudoarthroses of the Inferior Maxillary. P. Sebileau. Bulletin et Memoires de la Societe de Chirurgie de Paris, 1918, xliv, No. 26, p. 1308.**

The author discusses the results of his method of osteoperiosteal grafts in the treatment of pseudoarthroses of the lower jaw due to war injuries. Altogether thirty-four patients were operated upon, but as five operations were of very recent date (less than three months) at the time of the report, these are not included in the statistics, reducing the number to twenty-nine cases. The outcome of these twenty-nine operations was as follows: Five complete and permanent failures; five partial failures with anatomic and functional improvement, but no prospect of bony consolidation; four considerable improvements which will probably terminate in bony consolidation and reestablishment of the masticating function; fifteen anatomic cures through bone repair and functional restoration. All the grafting operations were performed under general anesthesia after intercricothyroid laryngotomy. There was no mortality and no complication worth mentioning; neither bronchopneumonia nor erysipelas occurred among these patients. On the other hand, thirteen patients presented a few days or weeks after the operation a serous, seropurulent or purulent discharge, coming from the operative focus. This percentage of suppuration is enormous, but is readily explained as follows:

1. Exacerbation of the latent microbism in the focus of open and infected fractures.

2. Bad conditions of the integument covered by scar tissue, which often breaks down after the operation, thus exposing the area of the graft to infection from the outside.

3. Accidental perforation, in the course of grafting, of the bucco-vestibular mucosa.

Suppuration was almost invariably followed by complete or at least partial elimination of the tissue-graft or metal prosthesis. Its occurrence therefore plays a most important part in the plastic and functional results of the operation. Notwithstanding its failures, the grafting method is undoubtedly advantageous in the treatment of pseudoarthroses of the lower jaw. Anatomic specimens are available, showing that the graft survives, becomes transformed

and hypertrophied, its sharp edges becoming fused into a common mass which assumes the appearance and consistence of a normal bone, adapts itself to the surrounding tissues and finally becomes incorporated with the fragments which received the graft.

Premature operations should be avoided in cases of pseudoarthroses of the lower jaw, and the author does not consider it advisable to operate before eight months. In order to safeguard the life of the graft in the aseptic environment which is indispensable for its survival, it is desirable to get away from the long period of suppuration and formation of sequestra through which all infected fractures must pass.

**Recent Work on Anæsthetics. J. Blomfield. Practitioner, London, 1918, ci, 279.**

Cotton, of Toronto, is quoted as saying, "Ethyl ether is not an anæsthetic, and the analgesia which comes from the administration of commercial ether is not due to ether, but rather to the impurities occurring in it." The impurities may be alcohols or acetones, which act antenasally, or aldehydes, which irritate the nasopharynx or bronchi. Absolute di-ethyl ether will not anæsthetize. If a small amount of carbon dioxide is present, the patient enters anæsthetic and analgesic stages. To obtain anæsthesia proper, one must have acting a narcotic together with an analgesic, e.g., di-ethyl ether and carbon dioxide.

The use of anæsthetics in war surgery at the front continues to provide much difference of opinion as to the best methods in cases of severe shock and hæmorrhage. Spinal anæsthesia, from which much was hoped, is in most hands regarded as disappointing and dangerous in these cases. Gwathmey finds that the performance of painful dressings gives a wide field for most advantageous use of oral anæsthesia.

Discussing the toxic factors of some of the common anæsthetics, Graham advances the view that the evil effects of chloroform are due to hydrochloric acid originating in the body from the decomposition of the anæsthetic. Certain anæsthetic substances, notably those which belong to the group of alkylhalids, are capable of yielding strong mineral acids in the tissues as dissociation products. For example, chloroform is broken down in such a way as to yield hydrochloric acid in the body.

The comparative efficiency of local anæsthetics has been subjected to experimental investigation by Sollman. The relative efficiencies, as established by experiment, are summarized thus:

1. For anæsthesia of mucous membranes, cocaine, beta-eucaine, alypin, and tropacocaine are the most useful. Alkalization increased the efficiency from two to four times; the mixtures, however, do not keep well and must be recently made.

2. For infiltration and injection anæsthesia, cocaine, novocaine, tropacocaine, and alypin are equally efficient. Beta-eucaine and quinine with hydrochloride are intermediate; apothesin and potassium sulphite (or chloride) are inefficient. Efficiency is not increased by alkalization. Several of the synthetic substances can completely take the place of cocaine.

Local anæsthetics are preferred by Farr in the performance of abdominal operations of all kinds. Novocaine is the anæsthetic preferred. For orthopedic operations Elmer favors ether and nitrous oxide and oxygen, and insists on the desirability of only light narcosis.

## *RADIOGRAPHY, Etc.*

**Interpretation of Radiographs.** Henry W. Gillett. Journal of the Allied Dental Societies.

Radiographs are at best uncertain means of diagnosis, and for any man, be he dentist, physician, or merely expert in radiography, to attempt to diagnose dental conditions from a radiograph alone, without accurate knowledge of the clinical conditions, will very often mean "ghastly mistakes."

We need the radiograph constantly in dental practice, not only for diagnosis but to judge of the progress of the work, and the only chance of getting its best service is when the operator fits himself to make and interpret his own radiographs. It is my understanding that in this state any radiographer without a dental degree who attempts to make a dental diagnosis from his radiographs infringes the dental law. I believe we should take measures to see that this feature of the law is enforced. I express this opinion, not because of any feeling concerning the ill effects of non-enforcement which may accrue to individual dentists, but because we shall not be doing our duty by our *clientèle* unless we do our best to protect them from incompetent and unwise radiographic interpretation.

It is essential that practitioners should fit themselves to interpret radiographs skilfully, and when any man has reached that point and is not ready to do his own radiography, he is in positon to refuse to employ any radiographer who attempts to add unsolicited diagnosis to his functions.

**Limitations of the Radiograph in Diagnosing Dental Lesions.** George F. Thomas. Dental Summary.

The limitations of radiography as a means of diagnosing dental lesions are of course familiar to all who have used it. Some of the early stages of inflammation will not show up; one may not be able to state whether a certain area is an active focus of infection or whether another is healed to nature's satisfaction; but nevertheless, in spite of these limitations, radiography is a valuable addition to the diagnostic armamentarium of the dental profession. In the illumination of those hidden foci of disease, unsuspected and undemonstrable by other methods, roentgenology has a proud achievement which, indeed, may be included as one of its most beneficial contributions to medical science.

**Systematic Development of X-Ray Plates and Films.** Millard B. Hodgson. New York Medical Journal.

If the delicate nature and extreme sensitiveness of photographic materials were better understood, there would probably be fewer poor negatives in all branches of photography. In average amateur photography of the better class

the operator is usually an enthusiast who has gone to considerable trouble to inform himself of the nature and possibilities of the materials with which he is working. With him it is a recreation. In the case of professional work, the photographer is usually one who has spent years in photographic practice.

With the average radiographer, however, photographic processes are but a means to an end and are very seldom considered as they should be. He fully understands the technic of taking the picture and he is able to interpret radiographs correctly, but too often he loses the efficiency that this knowledge should give him by faulty photographic work.

Few average radiographers have proper darkrooms. Any small cupboard or room may be made into a proper darkroom by observing a few simple rules. First, all cracks and holes for the entrance of outside light should be carefully plugged up. This done, the room should be illuminated by light of photographically safe quality. For a safelight of very moderate cost the Brownie safelight lamp is ideal for a small dark room. For larger rooms, the Kodak safelight lamp or the Wratten safelight lamp may be used. Any of these lamps will provide illumination of safe quality. A convenient bench should be at hand for the manipulation of trays or tanks containing developer, wash water and fixing bath, and, if possible, running water should be accessible.

Development is rarely considered as the chemical reaction that it is. The reduction of the photographic image to a silver deposit giving the finished image is a process of extreme delicacy. There is the utmost need of cleanliness, as with any other delicate chemical reaction. There should be a constant condition of temperature, purity of chemicals, and precision of timing. To eliminate difficulties in development so that the operator does not have to be trained chemist to obtain good results the Eastman Kodak Company has prepared certain kinds of developing powders which are of the proper purity and have been precisely weighed. These may be mixed properly by anyone if a simple direction sheet is followed.

After the completion of the development of the image, which is one chemical process, another chemical process must take place before the negative is complete, that is, the plate must be fixed, to remove unused and undesired materials. Before using an apparatus in any chemical operation, it is good practice to wash it thoroughly. The same rule holds good in the case of the photographic plate, which should be washed after the first chemical process (developing) and before the second chemical process (fixing) is performed. Now the finished image consists of a metallic silver deposit, the image, in gelatin. These materials in a dry state are relatively permanent. It is to render them so that all the chemicals which would affect this condition of permanency should be removed by thoroughly washing after fixing. The negative should then be dried in a place where there is no dust.

If these rules are adhered to, that is, 1, development under standard conditions for a fixed time; 2, proper rinsing between development and fixing; 3, thorough washing; 4, careful drying, all negatives that are reasonably exposed should be good negatives. A comparison of the work of individuals using this system, with others using haphazard methods will be sufficient to prove the point.

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# *EDITORIALS*

## A Problem in Dental Education

THERE is no other subject about which there exist so many diversified opinions or about which it is so easy to start an argument as that of dental education. The fact that so many different organizations, societies, and committees have suggestions to make regarding the situation proves that the question is one which is by no means satisfactorily settled. Every one who has been engaged in the practice of dentistry for a few years can remember the first attempt that was made to place dental education on a four-year basis, and then for some reason or other it went back to three years, and now again the four-year course has been adopted. In a great many states the laws have been changed to make four years compulsory before the candidate can pass or appear before a state board for examination. Along with the increased length of the dental term, the

entrance requirements have been raised until now a student must be a high school graduate, having taken four years of high school work. In some states these entrance requirements are so outlined that, not only must the student have four years of high school work, but he must have taken a certain number of special subjects during those four years and no other subjects can be substituted for those required. Not being satisfied with a preliminary requirement of four years of high school work some individuals and educators are advocating a higher preliminary education and a longer dental course. We also find certain schools boasting of the fact that their classes are limited to a small number of students, and those students are selected from the candidates having the highest preliminary education.

We have always advocated raising the dental profession by means of better education, but under the present plans that have been adopted there is a serious thing to be considered regarding the final outcome. The question is whether the lengthening of the dental college course and the raising of the preliminary requirements is going to raise the standards of the profession and produce a dental profession that is better able to serve the public than the dental profession has done in times past. In regard to dental and medical education a few men have questioned the wisdom of a long preliminary education as a requirement to the study of medicine and dentistry and then long years of special training. The question has been asked whether it would not be better to devote the time to dental education, thereby giving instructions only in those subjects which will make a student a better professional man, and not spend a number of years with high school and college subjects that have no particular bearing on dental or medical education. By careful study and analysis of the curriculum of the four-year dental course it will be seen that very little more time is given to the study of dental subjects in four years than was given to those same subjects in three years. In other words, would it not be better to give more intensified training on dental subjects during three years than to lengthen the course to four years, thereby causing the man to enter his professional life a year later?

The real purpose of any profession is to serve the public and we believe that the public will not receive better service as a whole by colleges turning out a few men who have spent a great many years in educational work along lines that do not necessarily enable them to be better professional men or to render better service to the public. The service to the public is limited to the number of patients that a dentist or physician can take care of. A man may spend four years in high school work, obtain a college degree, then spend four years in dental college, and at the end of that time, he will not be able to take care of any more patients than a dentist who was formerly only a high school graduate and took only three years of dental work. The increased preliminary education is going to diminish the number of dental graduates, and as a result of that, there will not be a sufficient number of men take up dentistry to care for the needs of the public.

This condition was illustrated both in the medical and dental professions when a number of men from both professions were called into service. It was found that not enough men were left home to take care of the public needs. We know of communities where all the dentists were in the service and no one

was left to take care of the civilians. While this was the result of an unusual condition, a similar circumstance will develop in the next few years if a higher preliminary education is necessary and more time is required to complete a dental course. The number of men graduated will be greatly reduced. Some say that if the dentist is more highly educated and spends more time in getting his education, he will render better service to the public. That may be true in one sense of the word, but while he may render better service, he will render that service to only a few individuals who are able to pay his price. As an example we might call attention to a few men in the profession who have specialized in prosthetic dentistry and are making wonderful dentures, the most efficient dentures that have ever been made; but they are making them at a price that the average individual is unable to pay, and are spending so much time on them that they do not turn out more than one set a week. In that case they have rendered indeed a service to one person, but there may be four or five persons who can not receive that service. There are other men who are making dentures for fifty dollars that by no means compare with the ones made by the highly skilled men for five hundred dollars, but the fifty dollar dentures render a service to the individual, and he is better off than he would be if he had no artificial teeth. In addition to this, a man who makes dentures for fifty dollars will take care of five patients while the highly skilled man is taking care of one.

Another example of high preliminary education working to the disadvantage of the public was shown by an editorial that appeared in *Journal of the American Medical Association* and also by several articles that have appeared in the daily press of Chicago. These statements dealt with the question of the registered nurse. For instance, a graduate nurse in Illinois is an individual who is a high school graduate and has spent three years in hospital training. There is no question about the efficiency of such a nurse, but those who have taken this long training, with the preliminary education, necessarily have reached a standard which places them entirely beyond the use of the average family. Such a nurse wants to work in the laboratories and operating rooms in hospitals; if she takes a private case, her salary is so great that the ordinary family can not afford it. As a result of this there has been an effort in Illinois to provide practical nurses who are not required to be high school graduates and who are required to take but eighteen months of hospital training. Such a nurse will be able to serve the average family just as efficiently as a highly educated and highly trained nurse, and would render a greater amount of service to the public than the registered nurse who is a high school graduate with three years of hospital training. The medical profession and the public in the city of Chicago and in Illinois, as a result of the recent influenza epidemic realized that some provision must be made for the benefit of the public, whereby nurses can be educated so as to be able to place their services within the reach of the average family. The shortage of nurses as a result of high preliminary education and the long years of training is an actual fact that has been recognized by medical journals and the press. However, in the face of these facts, men interested in dental and medical education are still rushing forward to the same condition as regards practitioners of medicine and dentistry.

We wish to clearly state that we are in favor of the better educated dentist,

but we are in favor of educating and making better dentists by intensifying and increasing the efficiency of dental education and giving them training in as short a time as possible, along lines that will increase their value as professional men, and thereby enable them to better serve the public. Any plan that is to reduce the number of dentists and increase the time required for their graduation is going to be an economic mistake for which the public is going to pay in one way or another. Any time that is spent upon preliminary education beyond the period where the applicant has received enough education to enable him to grasp professional subjects is going to be a waste of time so far as benefit to the profession is concerned. The required study of a lot of subjects which have no direct bearing upon his professional work is going to be time wasted so far as the good of the public is concerned, and will simply work a handicap by diminishing the number of men who enter the profession, thereby causing a decreased number who are able to care for the people. The real answer to the problem of dental education is: increase the efficiency of professional education rather than lengthen the time of preliminary education, stretching out the professional subjects to a greater number of years than are really required.

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## The American Society Of Orthodontists

THE nineteenth annual meeting of the American Society of Orthodontists was held in St. Louis, March 10, 11 and 12, 1919, with Dr. O. W. White, Detroit, Michigan, as president. Many papers of high character and great scientific interest were read and discussed. The attendance was good. The officers for next year are: President, Dr. John G. V. Mershon, Philadelphia, Pennsylvania; Secretary, Dr. Frank M. Casto, Cleveland, Ohio; Treasurer, Dr. Burt Abell, Toledo, Ohio. Chicago, Illinois, was selected as the next place of meeting; time, first week in April, 1920. The scientific proceedings will appear in future issues of the JOURNAL.

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## The Alumni Society of the Dewey School of Orthodontia

THE ninth annual meeting of the Alumni Society of the Dewey School of Orthodontia was held in St Louis, March 6, 7, and 8, 1919, under the presidency of Dr. A. O. Oliver, Nashville, Tennessee. Several interesting papers were read and freely discussed. These papers with the discussions on them will be published in future issues of the JOURNAL.

The following officers were elected for the ensuing year: President, Dr. E. G. Weeks, Saginaw, Michigan; Vice-President, Dr. S. W. Bradley, Ottawa, Canada; Secretary-Treasurer, Dr. George F. Burke, Detroit, Michigan.

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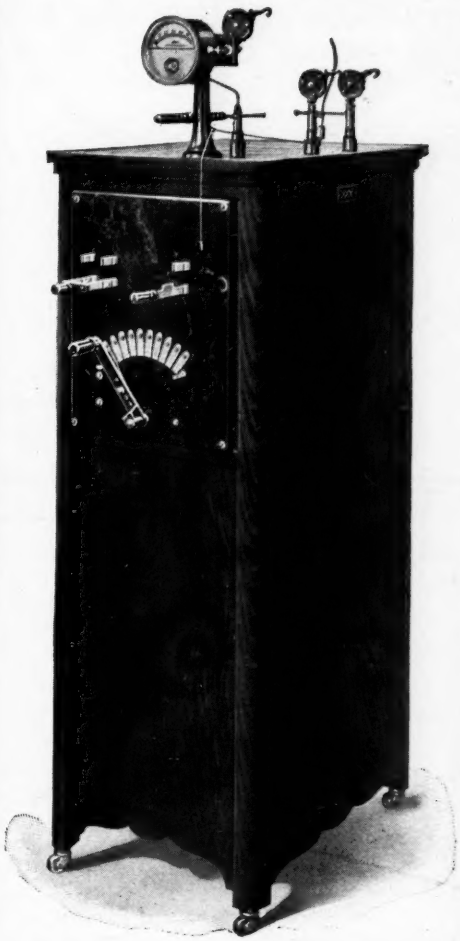

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JOHN V. MERSHON, D.D.S.
President of the American Society of Orthodontists, 1919